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Railway Age

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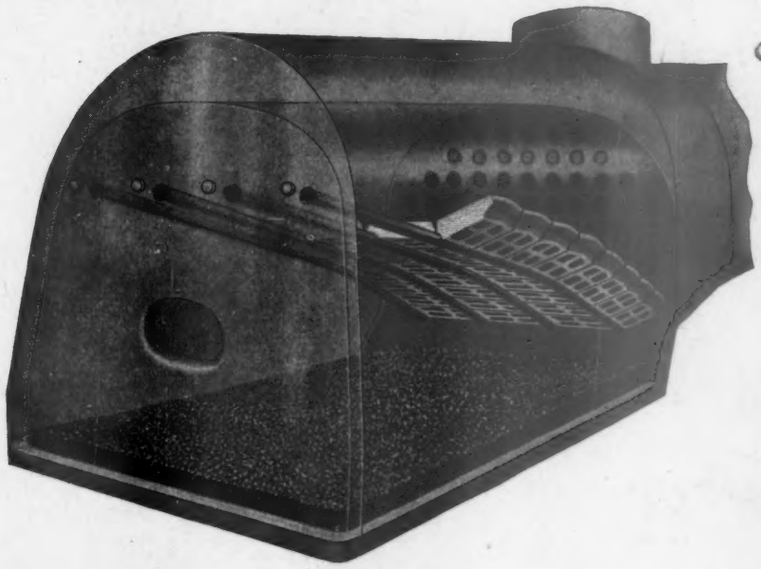

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EDITORIAL

Railway Age

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A Logical Step In Locomotive Development

The plain saturated locomotives with narrow fireboxes built before 1900 all had one outstanding limitation, the lack of boiler capacity at speeds above about 20 miles an hour. The first step taken to remedy this condition was the application of a wide firebox and a trailing wheel on passenger locomotives. As the size of motive power increased it became necessary to place the firebox behind the drivers on freight engines as well, adhesive weight being sacrificed to get greater steaming capacity. Most of the important developments since that time have tended to improve locomotive performance at the higher speeds. Typical modern designs for both passenger and freight service have considerable excess boiler capacity at low speeds and a relatively large proportion of weight on leading and trailing trucks. Where the locomotive of twenty years ago had relatively high starting tractive effort and was deficient in steaming capacity the modern locomotive often has inadequate adhesion for starting and considerable excess boiler capacity at low speeds. The desirability of a better balance between the starting tractive force and the power at running speeds is shown by the numerous efforts now being made to utilize the locomotive and tender trucks to secure additional power. Three different designs have been brought out of which two have already received thorough tests. There is no longer any room for doubt as to the practicability of locomotive boosters mechanically or their advantages from the operating standpoint. They represent the logical increase of machine power to utilize the increased boiler power already secured and will no doubt assume an important place in future locomotive design.

Pennsylvania's Lease of Panhandle

The Interstate Commerce Commission in a decision dated July 10 has approved the lease by the Pennsylvania Railroad of the Pittsburgh, Cincinnati, Chicago & St. Louis. It has made its approval conditional by adding a proviso that the Pennsylvania Company and the Pennsylvania Railroad Company shall not dispose of their stock in the Panhandle without the commission's consent. All of the stock of the Pennsylvania Company is owned by the Pennsylvania Railroad Company. The Pennsylvania Company and the Pennsylvania Railroad together own 98.3 per cent of the total shares outstanding. The proviso resulted in a number of dissenting opinions, these being expressed by Commissioners Hall, Daniels and Campbell. Commissioners Eastman and Aitchison dissented for other reasons. Commissioner Potter in a concurring opinion giving the views also of Commissioners Lewis and Cox expressed his disapproval of the proviso. It has not yet been announced whether the Pennsylvania management will go forward with its plans or not. The proviso is an apparent handicap to future financing on the part of the Pennsylvania insofar as concerns the Panhandle stock. Commisioner Potter says that "The condition is inherently unwise and unreasonable." A most important feature of the decision, however, reverts back to one of the main reasons for the desire to lease the Panhandle property. This was to save accounting costs and to get around the necessity of figuring out divisions of rates and classifying charges and costs of operation as between the Panhandle and the parent company. The savings in costs would be great and very much in line with the country's desire for decreased railway costs. It is disappointing that the Commission should feel it desirable to put obstacles in the way of such progress and particularly disappointing because of the unusual nature of the obstacle itself. We shall probably hear more of this decision.

Strikes and Fast Freights

Press dispatches from Fresno, Calif., are to the effect that $200,000,000 worth of fruit may be endangered by lack of freight transportation. This figure may be exaggerated. It may, indeed, be strike propaganda. Whatever it is, it emphasizes the importance that fast freight service bears to the welfare of the nation from the standpoint of keeping consumers distant from the producing centers supplied with foodstuffs of one sort and another. Fast freight service in this country is also one of the best indexes of efficient railroad service, the degree of efficiency being indicated by the fast freight schedules and the manner in which trains are kept on schedule. It is, therefore, at the present time an index, in addition, to the manner in which the various railroads are being affected by the shopmen's strike. If anything, it is a better index than the passenger service for the simple reason that special efforts are usually directed towards keeping passenger trains running normally and other things in comparison are secondary. With these ideas in mind it is interesting to learn from shippers that a number of roads, among them notably the Lackawanna, the Lehigh Valley, the Illinois Central, the Nickel Plate, the New Haven, and to a lesser extent, the New York Central and Pennsylvania are keeping their schedule freights on time, thereby showing that they apparently have the strike situation well in hand. The idea might be carried further. It is axiomatic that strikes are won or lost through the force of public opinion. It is an interesting psychology whereby the striking shopmen try to prove their case to the public by desiring first to tie up or delay passenger service which inconveniences the public itself and second to tie up the freight service—notably the fast freight service—which endangers the public's food supply. Various able students have recently been making a careful study of public opinion—its cause and effect. They will be very likely to find much material in the present railway strike.

The Trend in Building Design

One of the most attractive fields for the display of engineering ability in railway service and one which has only recently come to be recognized to any extent lies in the design of buildings for their most effective occupancy. The time has not long passed since the average engineer confined his attention to the design of the foundations, walls, roof and floor to carry the loads imposed on them safely and to the selection

of the materials of construction on consideration of maximum economy in first cost and maintenance. The more modern idea of building design contemplates all of this and more. It is coming to be considered that a building is well designed only when it complies with the principles of engineering as applied to both the construction and the operating needs of the department which will use it. This implies a thorough study of the methods of the using department and the visualization of these methods as they will be applied in the new structure. Only by such an investigation prior to the design of the structure can arrangements be made for the installation of the facilities required by the using department. The engine terminal which the New York Central is now completing near Syracuse, N. Y., and which is described on a following page, is an illustration of the care with which such buildings are being designed. It is evident that the spending of a relatively small amount for additional engineering services in the design of such a structure will yield large returns in decreased costs of operation by the department which will occupy it. It is from refinements such as are, for instance, noted here in the design of the enginehouse, the coaling station and the somewhat unusual type of ash pit, that many of the economies of railway operation must come in the future. Engineering department officers can contribute in no more effective way to the success of their companies than by utilizing every opportunity to familiarize themselves with the needs of the other departments which they serve and then so designing their structures that they may meet these needs to the largest possible extent.

Effects of Wheel Arrangement

"Electric Locomotives" is the title of a paper presented recently to the Institution of Mechanical Engineers by Sir Vincent L. Raven, chief mechanical engineer, Northeastern Railway, England. The paper describes the characteristics of many existing electric locomotives and outlines the requirements of electric locomotives for various classes of service. The comments made by Sir Vincent on the effect of wheel arrangement are of particular interest. There is a well-founded opinion in America that a symmetrical wheel arrangement is undesirable for high speed service as it may be the cause of excessive lateral oscillations or "nosing." Sir Vincent mentions this and then points out the fact that there are a number of locomotives with symmetrical wheel arrangements used successfully up to speeds of 75 miles an hour both on British and Continental railways. As an explanation for this difference he suggests that a possible cause of the trouble experinced in the United States and from which European railroads seem to be free is that on practically all railroads in the United States the rail joints are staggered, whereas on the British and also on French railroads the rail joints are opposite each other. Quite possibly staggered joints do contribute to the necessity for using unsymmetrical wheel arrangements and it is a point whicn may profitably be determined. In any event the paper by Sir Vincent provides an example of how the knowledge of a subject may be broadened by interchange of ideas and information. There is a more or less prevalent opinion in this country that the United States has nothing to learn about electric railroads in Europe because conditions in the two countries are so different. Fuel costs in Europe are generally high, train weights are comparatively light and the length of haul short. The point brought out by Sir Vincent, however, indicates what can be accomplished and how much has been done by the International Railway Congress, by the visits of European engineers here and American engineers abroad and the exchange of information by letter and periodical.

Equipment Orders in June

THE LOCOMOTIVE orders reported in the issues of the *Railway Age* in June totaled 27; for freight cars, 11,097, and for passenger cars, 37. These totals include only the orders for equipment for domestic service. They are the orders reported in the issues of the *Railway Age* of June 3, 10, 17 and 24, but they do not include the cars or locomotives reported in the *Railway Age* of July 1. The June totals would be somewhat disappointing were it not for the fact that whereas normally there is seasonal decline at this time of the year, this year the buying movement has been continued into July in rather favorable manner. Totals for the first three weeks of July show 111 locomotives, 9,475 freight cars and 11 passenger cars. The totals for the month, for the half year and for July to date are shown in the following table:

DOMESTIC ORDERS

Month	Locomotives	Freight cars	Passenger cars
January	5	7,960	235
February	8	14,721	160
March	76	5,550	25
April	272	30,507	540
May	99	18,337	235
June	22	11,097	37
Total six months	482	88,172	1,232

July—first three weeks: Locomotives, 111; freight cars, 9,475; passenger cars, 11.

Presumably the most interesting feature of this table is that while the car and locomotive buying this year has not been exactly spectacular or record-breaking, it has gone on during a period when there was a car surplus and when there were large numbers of bad order cars and unserviceable locomotives. The buying movement has continued during a severe coal strike and seems to have suffered little, if any, retardation from the effect of the shopmen's strike. In fact, if anything, the latter strike has helped the builders because it has resulted in additional orders for contract repair work. The coal strike has hurt railway revenues but its continuance for a period of 3½ months is rather an argument in favor of equipment purchases because when the coal finally does begin to move the demands upon equipment supply will unquestionably prove severe particularly in view of the increase in the tonnage of other commodities which has characterized recent months.

The car and locomotive market has been greatly assisted by lower prices. Steel underframe box cars have been secured in recent months at prices approximating $1,500 or $1,600, steel hopper and gondola cars at from $1,600 to $1,800, the price varying, of course, with the size and design. Refrigerator cars cost at present about $2,700. Typical locomotive prices are $40,000 for a Pacific and from $37,000 to $42,000 for a Mikado. Six-wheel switchers have been bought at about $30,000 to $33,000. Passenger coaches have been secured at about $20,000. These prices represent marked decreases from the high prices which ruled in 1920 and are apparently proving a real attraction in so far as concerns bringing out orders. Considering the situation as a whole, other than the fact that we should normally expect a decline in business in the summer months, there is nothing at present in sight to lead one to believe that the equipment business will do else than continue in good volume.

The important orders in June included orders placed by the Baltimore & Ohio for 1,000 gondola cars and 1,000 box car bodies; Seaboard Air Line, 1,000 cars; New York, Chicago & St. Louis, 1,000 automobiles; Wabash, 2,050 gondola car bodies; Atlantic Coast Line, 700 box, 30 passenger train cars, etc. Orders thus far in July have included among the important orders: Baltimore & Ohio, 35 Mikado locomotives; Chicago & Eastern Illinois, 10 Mikado and 6 Pacific type locomotives; Southern, 15 Mikado, and New York, Chicago & St. Louis, 14 locomotives. Freight car orders have included 1,000 automobiles, 250 stock and 250 gondola cars ordered

by the Northern Pacific, 2,000 refrigerator cars placed by the Western Pacific, 2,000 hopper cars ordered by the Norfolk & Western, etc.

English at the International Railway Congress

COMMENTS published in the *Railway Age* for May 20 on the difficulties met by English-speaking delegates to the Congress of the International Railway Association at Rome last April in following and participating in the discussions have called forth a letter from V. Tondelier, president, and J. Verdeyen, general secretary of the Association, which is published elsewhere in this issue. Messrs. Tondelier and Verdeyen evidently think that what was said in the *Railway Age* may cause misunderstanding. The article in the *Railway Age* specifically stated that "French is the official language of the Association; and courtesy required that the language of the country in which the Congress was held should also be used." It added, however, "but certainly all the English-speaking delegates felt that English should have been used more, in view of the fact that more of the world's railway mileage is operated and more of its traffic is handled in countries using English than in countries using any other language."

Messrs. Tondelier and Verdeyen point out that all the reports were published in English translations and that résumés of all reports also were published in English. This is, of course, correct, and it might be added that the summaries of the reports published in English in Volume 4, Number 4, of the bulletin of the Association constituted discussions of a large number of technical railway problems which could be studied with profit by every man who desires to acquire a broad knowledge of the present practice, and the progress in practice, of the world's railways.

The comments made in the *Railway Age* pertained solely to the difficulties met by the English-speaking delegates in following and participating in the proceedings and discussions at the sessions of the Congress in Rome. Messrs. Tondelier and Verdeyen refer to the fact that all the speeches and communications made in each section were immediately rendered briefly in English and published in the English edition of the Daily Journal. Frankness requires us to say, however, that the summaries of the discussions published in English in the Daily Journal were so brief and fragmentary that they were not as helpful as they might have been made, and that in many cases interpreters who were employed to state in English what delegates had said in French, Italian and other languages, spoke English which it was difficult for the English-speaking delegates to follow.

The *Railway Age* does not desire to injure the International Railway Association, but to help make it a stronger and more useful organization. We realize that the language problem presented is a very difficult one. If, however, the problem is to be solved, it must be clearly stated and boldly attacked. The fact is, the United States is so far from France and the rest of Europe that extremely few Americans, including railway officers, speak or understand French or any other European language except English; and it had just as well be recognized that this will always be the case. The same thing is true of all other English-speaking countries, although not to the same extent of England because England is separated from the continent of Europe only by a very narrow body of water. It is further true that at the recent sessions of the Congress in Rome most of the English-speaking persons attending could not understand a word of what was said in discussions often lasting for hours at a time, in addition to which, as we have said, the reports of the discussions published in English were very fragmentary and inadequate. To say that French is the official language of the Association largely explains the situation, but it does not in the least tend to remedy it. The only remedy is for English to be used more.

Why should not the Permanent Commission of the Association consider the question of making both French and English official languages, and arrange for English to be used as much as French? It may be replied that the attendance of English-speaking delegates has not been sufficient to justify this. But how can the Association reasonably expect to get a larger attendance and participation by English-speaking railway men if it does not arrange for more use of the only language that most of them can understand? It would be no more tedious and unprofitable for delegates speaking other languages to listen to long discussions in English than it is for those who speak English to listen to long discussions in other languages. We urge upon the Permanent Commission serious and early consideration of this problem, as we feel sure that whether there will be an increase or decrease in American participation in the work of the Association will depend mainly on what is done about it.

Why the Strike Is Not Settled

THE INFORMAL conferences held by Chairman Hooper of the Railroad Labor Board recently with several railway executives and representatives of the striking shop crafts unions has made clear there are five matters upon which these railway executives and the labor leaders differ widely, and which must be settled before the strike can be terminated.

The public mind lately has apparently become somewhat confused regarding the attitude of the two parties relative to these matters. It is necessary that this confusion should be cleared up, since public sentiment must be relied upon to determine the outcome. The five major points involved and the positions taken by the railway executives and the labor leaders in these conferences are as follows:

First: Wage decisions of the Labor Board. The labor leaders insist that before the men will return to work the railroads must agree to pay wages different from those awarded by the Labor Board. The railway executives have positively refused to consider paying any wages except those awarded by the Board, but have indicated that the railways will be represented at any further hearings that the Board may hold, and will accept such modifications, if any, in the wage awards as the Board may hold reasonable after rehearing.

Second: Rules and working conditions. The labor leaders demand that the railways agree to modifications of the working rules made by the Labor Board as a condition of calling off the strike. The railway executives have positively refused to consider this, although indicating that if any modifications of the rules should be made by the Board after further hearings they would be accepted. The position of the railway executives who have conferred with Chairman Hooper has been that for the railways to grant to the strikers any rules or wages not authorized or fixed by the board would be to concede, in response to the use of force, more than the employees were able to secure by peaceful means. For the railways to let the labor unions get by force what they could not get by arbitration as prescribed by law would be directly to encourage the use of force in future labor controversies.

Third: Contracting of work. The labor leaders still claim that this is one of the principal matters in controversy. Samuel Gompers, president of the American Federation of Labor, in an interview published in the newspapers July 14 made the statement: "The railroads, in ignoring the Board's

decision on repair work contracts, are violating the Transportation Act because that Act specifically provides that such repair work shall not be let to outside contractors." Mr. Gompers' statement is entirely false. Neither the Transportation Act nor any other law does or ever did specifically provide that the railways should not let repair work to outside contractors. Furthermore, all the railways except two which have done contracting of the kind against which the Labor Board has ruled have agreed to discontinue doing so in compliance with the Board's request.

Fourth: Boards of adjustment. The labor leaders have succeeded in making many people believe that the railways have refused to establish boards of adjustment as provided by the Transportation Act. The facts are as follows: The Transportation Act provides (Section 302) that "Railroad boards of labor adjustment may be established by agreement between *any carrier, group of carriers, or the carriers as a whole,* and any employees or subordinate officials of the carriers, or organization, or group of organizations thereof." The leaders of the shop crafts have demanded the establishment of *national* boards of adjustment by the "carriers as a whole." The railways have insisted on the establishment of boards of adjustment representing only *each carrier* and its own employees, but the railway executives who have conferred with Chairman Hooper have indicated willingness to establish regional boards of adjustment on which would be represented each "group of carriers" and their shop employees, such as have been established for the train service employees. Either local, regional or national boards of adjustment would be in complete accordance with the Transportation Act.

Fifth: Seniority and pension rights, etc. The labor leaders insist that all men who have struck shall be taken back with the same seniority, pension and other rights and privileges which they had before they struck. Most of the railways individually have published advertisements and posted notices to the effect that strikers who did not return to work within designated periods would lose all these rights and privileges and have to return, if they returned at all, as new men. On every railway there are many men who have stayed at work or gone back to work with the understanding that at the termination of the strike they would be protected in seniority rights superior to those of the men who struck or did not return to work within the limits set. The men who struck voluntarily dissolved all relationships with the railways for which they had been working, and gave up every claim, based on continuity of service, that they had to special consideration. The men who have stayed at work or gone to work during the strike have prior claims upon the companies, the establishment and recognition of which are based upon working rules which the striking unions themselves have got adopted. The seniority rule is a rule which has been established because the unions demanded it, not because the railroads wanted it. For the railways to let the strikers come back with all their old rights and privileges would be to encourage still more men to strike when there is another controversy.

The public cannot, in its own interest, sanction any settlement based on any wages or working conditions except those established by the Labor Board. It cannot rationally sanction continuance of a strike against all the railways of the United States because two persist in contracting work. It cannot sanction continuance of the strike because the railways will not establish national boards of adjustment, when the Transportation Act also provides for local and regional boards of adjustment. Nor, it would seem, can it afford to support the labor leaders in demanding that men who have struck against the decisions of the Railroad Labor Board shall be taken back into service with rights and privileges superior to those of men who have accepted these decisions and stayed at work.

For men to gain anything by striking against the decisions of a government arbitration body would be to destroy the government arbitration body, and with it, the means of peaceful settlement of railway labor controversies in the future.

The British Report on Train Control

AMONG THE HIGH LIGHTS in the report of the Automatic Train Control Committee to the Ministry of Transport of Great Britain are its recommendations that the contact type of train control be adopted; that continuous control and speed control are not necessary to meet British operating conditions, and that a system of train control should supplement, but not replace, the existing signal system. On reading the report (which appears elsewhere in abstract in this issue), one cannot help but be impressed by its thoroughness. It appears to have been handled strictly from an engineering standpoint and its conclusions are based on intensive investigation.

The committee selected the contact type of control in preference to others because the ramp and shoe type has been more highly developed, is better known and has proved reliable after many years of satisfactory operation under all conditions. While the committee felt that the continuous type of control had advantages, it concluded that its disadvantages outweighed the advantages. Speed control was not deemed necessary because the accidents investigated which might have been prevented by it comprised only 1.6 per cent of the total and these, the committee felt, could have been prevented by other means. The committee felt that the intermittent induction type required more or less complex electrical apparatus on the locomotive which would add to the expense of installation and increase the likelihood of failures, which, even though on the safe side, would cause unnecessary delays.

In Great Britain, it is interesting to note that the Great Western has had an electro-mechanical system of control in service at distant signals for the past 16 years with about 200 track miles and 100 engines equipped. The North Eastern has had a mechanical appliance in operation at distant signals for about 15 years with 89 route miles and 1,528 locomotives equipped. The Great Central has had apparatus known as "Reliostop" in service for seven years, on 42 route miles and on 20 locomotives. The London & North Western has experimented with the Leigh device and the Biddle device, while the Great Eastern has experimented with the Syx, Daniels and Regan systems. The London, Brighton & South Coast has been experimenting with the Angus system of continuous train control.

While conditions in Great Britain are different from those in this country, the fundamental principles affecting the application of train control are largely similar and the report of this committee confirms the views already expressed editorially in these columns that it is advisable for American roads to start with simple apparatus and develop it along lines which experience shows to be necessary to meet traffic conditions rather than to attempt to force installations which later may prove unsuccessful. In striking contrast to the British report that such devices should be an adjunct to the block system, we find the Interstate Commerce Commission, in its order, saying that it has "no desire to discourage efforts to automatically control trains without the aid of fixed wayside signals," which position we believe to be a mistake on the part of the commission, considering the present development of the art.

Considering the importance of the train control question in this country we suggest that the report of the British committee be studied by railroad officers and members of the Interstate Commerce Commission, as it is a valuable contribution to the literature on this subject.

Letters to the Editor

[*The* RAILWAY AGE *welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about* 250 *words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.*]

The Operating Officers' Interest in Statistical Requirements

NEW HAVEN, Conn.

TO THE EDITOR:

Your editorial entitled, "A Proposed Revision of the Operating Expenses Classifications" in your issue of June 17 and that headed, "The Matter of Statistics" in the issue of July 8 have in them much that should be of interest to railway operating men. The only adverse criticism which I would make of them is that you do not sufficiently show your position in the matter of the proposed changes in accounting requirements. This is doubtless due to the fact that you do not wish to take a definite stand at this time when the situation is still more or less indefinite.

It is my understanding that the source of the present inquiry came, first, from the difficulty experienced in compiling quickly information for the I. C. C. and the Senate Committee in the hearings in the past two or three years, and second, from the complaints made concerning the increasing cost of clerical work.

With reference to the latter, I have checked up the facts as to the increase in the number of clerks. I know that on our own road there was a large increase in clerks, but during the last year or so, there has been a considerable decrease. It is reasonably certain that if we exclude the men who are working on the various special jobs required by federal and guaranty period settlements, rate hearings, wage investigations, etc., the number, in comparison with the amount of business, will not be much different from the number in the period prior to federal control.

I assume that the first item is that which is of the most serious importance. As expressed by J. J. Ekin in his president's address at the Accounting Officers' meeting, the general impression seems to be that we should proceed along the lines of simplification in our accounts. Does simplification mean primarily, reduction in the number of accounts? I do not think that any one would be rash enough to state that it is not an advantage to reduce the number of accounts *if this can be done without reducing the amount of necessary information.* Simplification, however, does not necessarily mean elimination.

I think everyone would be glad to see a reduction in the enormous amount of detailed statistical and accounting work which is now necessary. This applies to both the revenue and expense sides. We have, however, this situation confronting us. The total net railway operating income which the railroad can earn is now limited to a percentage so low that in many cases it will do no more than provide a small return on the total amount of capitalization. Furthermore, there appears little prospect that the freight and passenger rates will be so fixed that this return can be made without difficulty. In the third place, the Transportation Act requires the Interstate Commerce Commission to give attention to the efficiency and economy with which railroads are operated. Since these three things are so, it is particularly necessary that the roads should know:

1. What classes of traffic are remunerative and those which are not.

2. Where further economies can be effected through increased efficiency and how much can be expected from these economies.

To obtain this sort of information requires a large amount of data, both accounting and statistical. It may be possible that the reduction in accounts will effect some reduction in the number of clerks in the accounting offices, although I believe there is room for considerable argument on this point. Regardless of this feature, however, the amount of work necessary to provide detail required by the operating officers would be very largely increased if we are to continue to provide the same amount of information to our operating officers that is given them today. This is particularly true in the grouping of the transportation expense accounts. The group "Other Yard Expenses" contains many elements which have no bearing on each other and which will vary from month to month by differing percentages. It will never be sufficient for an operating officer to know that other yard expenses have increased or decreased by a certain per cent when that group includes everything from the wages of a general yardmaster to the price of a fire hook on a yard locomotive. It would not be logical to combine the labor accounts into one item since the fluctuations of cost of yardmasters and clerks or of switch and signal tenders do not correspond with the fluctuations in yard enginemen and trainmen. The same general criticisms apply to grouping all the train accounts, other than fuel, into one item.

From the point of view of the operating officers, it is illogical to reduce the amount of information available for their purposes just at the time when the slight margin between revenues and expenses makes it absolutely necessary that they be provided with all the data which can be provided at a reasonable expense.

This objection to a decrease in the amount of information provided is even more serious when an attempt is made to determine the cost of some particular class of traffic. If we wish to ascertain the cost of suburban passenger service near a large city, or the cost of milk traffic, or the cost of less carload freight within a certain territory, it is necessary to sub-divide the accounts in even greater detail than the present classification provides. For example, the maintenance of station and office buildings must be divided as between office buildings and station buildings; the maintenance of shops and engine houses between shops and engine houses. Furthermore, accounts such as the various yard and train accounts must be sub-divided by individual yards or individual groups of trains. The proposed yard groups, containing not only wages but other elements which fluctuate in varying degrees, would render any such further sub-division extremely difficult. For example, if an attempt were made to divide freight train expense as between fast, slow and local trains, the sub-division of the expenses for water, lubricants and other locomotive supplies might well be made on the basis of locomotive fuel. On the other hand, the sub-division of the wages of train and engine crews into these three elements would require an entirely different basis of apportionment. When any such studies were made, therefore, the entire account would have to be broken down and set up on some basis as is provided at the present time. There appears little doubt that the additional work of breaking these accounts would entirely offset the economies which would be affected in compiling the accounts currently.

There is one other feature from the point of view of the operating department which requires attention. If accounts and statistics are to be changed, it would appear that operating department representatives should be consulted as well as the accounting department. The operating department officers are interested in the results although they may not be interested in the methods by which those results are obtained. In this work, I believe that a committee of operating officers, who have knowledge and understanding of statistics and make practical use of them, could well co-operate with

the accounting committee and the commission, at least when they are near the end of their labors. If such a committee were provided, the results obtained would furnish the proper balance in results obtained. The accounting department is responsible for the compilation of the statistics and for their accuracy and would be in a position to keep down the requirements in the way of accounts and statistics to a point where they can be effectively handled. In addition, the operating department would be represented and its voice heard to the extent that the data provided would be of practical use to the operating officers.

J. E. SLATER,
Special Assistant to General Manager, New York, New Haven & Hartford.

Dispatchers and Engineers

HAILEYVILLE, Okla.

TO THE EDITOR:

I have been reading the recent articles in the *Railway Age* concerning the controversy between the dispatchers and engineers. When the thing is all boiled down to the proper degree there is not very much to it. When one man commences to criticize another, who is in an altogether different department, there are ten chances to one his criticism is unjust. We cannot all be first class workmen in our several lines of work but I will venture to say that the man who has the interest of the company and his family at heart is doing the very best he can under the conditions which are open to him. In my experience in the railroad game which dates back over 30 years, in various departments, I have found some poor men in each department and the percentage of poor dispatchers, compared with engineers, is in favor of the engineers. It is true the dispatcher is always working against an unknown quantity; in other words he is banking his judgment on moves which he anticipates will be made providing every thing goes all right. If some engineer falls down his plans are all shattered; so with any one else concerned in the movement, or some part of the machinery. If the dispatcher falls down there will be some body else fall down and vice versa from one day's end to the other.

As long as the world stands individuals will make mistakes and have shortcomings but why not bury the hatchet and let the principles of the golden rule prevail? The railroad company pays us for every minute we work and it should make but little difference what we are doing, whether laying in the side track a while or sitting in the office smoking cigars.

It is the opinion of the writer that so much strife between the men employed by the railroads is caused by the fact that they are not better personally acquainted with each other; they should do more visiting with one another and study the characters of the individuals; in other words tune up for each other. I worked with a conductor once for nine years and had never met him personally; I came to the conclusion that he was about the worst man I had ever run across; we frequently had little tilts in connection with the work; no doubt he had formed the same opinion of me. However, I had the opportunity one time to meet him personally and we had a long visit. From that day to this I do not know of a finer man to work with. We know each other now and know just about how to set our pegs to avoid any friction whatever. Let's all get together closer, line up for each other, cut out the criticism and this old world will be a better place in which to work and live. My argument is borne out here on the Rock Island where the employees' clubs have been functioning for over a year; we know each other better; we get together frequently. The atmosphere is altogether different to what it was before the clubs were formed. Let's keep the clubs going. The railroad will be better off in every way; the employees will be better; the public will be benefited.

J. L. COSS,
Train dispatcher, Rock Island Lines.

Language Problem of the International Railway Association

BRUSSELS, Belgium.

TO THE EDITOR:

We have read in the *Railway Age* for May 20, 1922 (pages 1156 and 1163), the articles published on the International Railway Congress held in Rome in April last.

Our attention has been specially called to the paragraph entitled "In French and Italian," in which you point out the difficulties met by the English-speaking delegates, and especially by Americans, in taking part in the discussions.

We think we ought to remind you that article 16 of the statutes of our Association stipulates that "The discussions shall be conducted in French or in the language of the country in which the Congress is held. Speeches in any other language shall be translated into French." However, at the Berne session in 1910, at the request of delegates from English-speaking countries, a résumé of the discussion was given in English in each section in order that the said delegates might effectively follow the proceedings.

Special arrangements were made by the Organizing Committee for the Congress at Rome for the translation into English of all documents, discussions in sections and proceedings of the general meetings. All the reports of the reporters were published in English and distributed to the delegates before the opening of the session.

For every subject or question a brief résumé of these reports was published in English so that delegates, whose appointment had been delayed (as was the case with several American administrations), were able to obtain sufficient information before the sectional meetings.

All the speeches and communications made in each section were immediately rendered briefly into English and published, *for the first time in a non-English speaking country,* in the English edition of the Daily Journal. Sir Henry Fowler, chief mechanical engineer of the Midland Railway (England), was appointed a general secretary of the session, and although it was impossible for him to correct all the proofs of the Daily Journal, he paid attention to the conclusions arrived at.

In addition of the five sections of which the Congress was composed, the presidency of two of them was confided to English-speaking officials: George Gibbs, chief engineer of electric traction, Long Island Railroad (U. S. A.), for the second section, and Gustav Behrens, a director of the Midland Railway (England), for the third section. The first section was presided over by a Belgian, the fourth by a Frenchman, and the fifth by an Italian.

It is possible that the organization was not quite as satisfactory as we had hoped, but this was chiefly due to the small number of delegates from English-speaking administrations having sufficient knowledge of either of the official languages of the Congress (French and Italian). We are already trying to discover what improvements can be made in this organization for future sessions which do not take place in an English-speaking country.

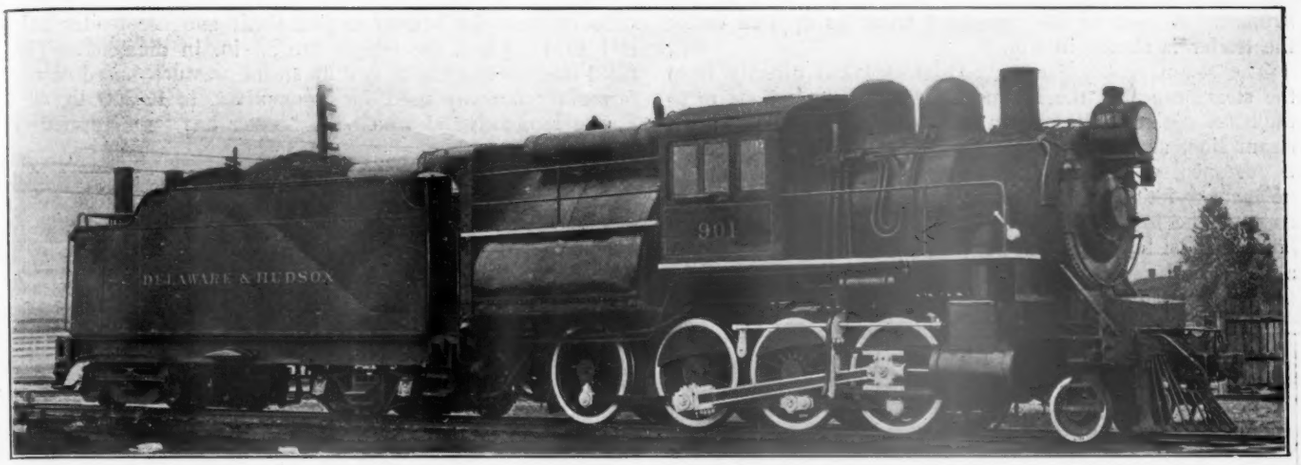
We trust, however, you will be good enough to recognize that we have done the best we could to give every satisfaction to the English-speaking delegates.

We may also add that the English and American delegates generally expressed their appreciation of the arrangements made to assist them in understanding the discussions.

As the articles which your estimable journal has published might be wrongly interpreted by readers having no knowledge of the organization of the congresses of our Association, we should be very glad if you would kindly publish this letter in an early number of the *Railway Age*.

V. TONDELIER,
President.

J. VERDEYEN,
General Secretary, International Railway Association.



Superheated Consolidation Locomotive to Which the Tender Booster Has Been Applied

Booster for Tender Trucks Developed on D. & H.

Utilizing Tender to Increase Tractive Power Enables Locomotives to Haul Heavier Trains

DURING THE past two years there has been developed on the Delaware & Hudson a booster designed for application on the tender trucks. The basic principles underlying this development were: First, to utilize as a source of revenue tractive power at moderate speed the excess boiler capacity, the volume of which is increased materially by the use of superheated steam. Second, to convert the tender weight, unused as a motive agent, into a means of obtaining additional tractive power, the amount of increase depending on the speed and whether the application is made on one or both tender trucks. Third, to obtain more nearly constant tractive force at the tender draw bar during successive revolutions of the locomotive. The development of the tender truck booster has now progressed sufficiently to prove that these objectives have been attained.

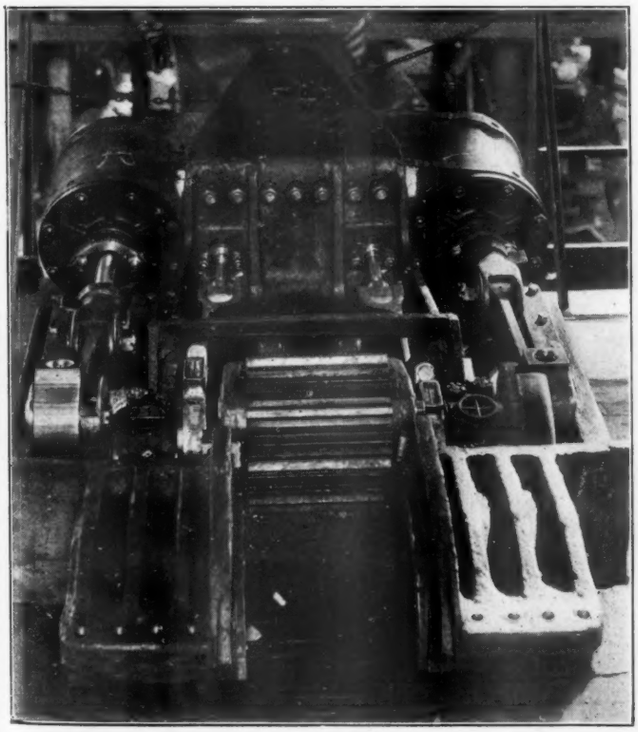


Fig. 1—Booster Engine Assembled in Shop

The tender booster, which has been patented jointly by J. A. McGrew, general superintendent of equipment and way and J. T. Loree, general manager, comprises a four-wheel truck fitted with side rods and a reciprocating steam engine, arranged to drive one of the axles. The engine which supplies the motive force for the booster is shown in Fig. 1.

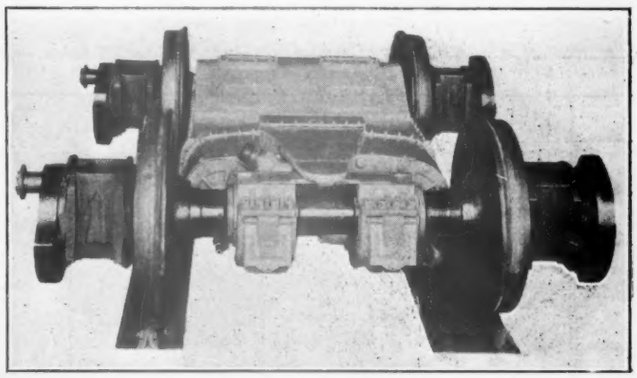


Fig. 2—Booster Truck Before Frame Has Been Applied

It is a simple two cylinder engine with 10-in. by 10-in. cylinders. On the main shaft of the booster engine is a pinion and on one of the tender truck axles is a large gear. Intermediate between them is a gear arranged to be thrown into mesh between the pinion and the large gear by a bell crank operated by a piston impelled by the superheated steam forming the motive agent for operating the booster cylinders. In Fig. 2 the engine is shown mounted on the axles before the frame has been put in place. The two bearings shown in the foreground of Fig. 1 span the geared axle and the opposite end of the frame casting rests on springs supported by journal boxes on the other axle, giving a three point

support. A view of the completed truck as applied under the tender is shown in Fig. 3.

The steam supply for the booster is taken directly from the steam pipes of the locomotive. Admission of steam to the booster is controlled by an air-operated valve in the main steam line, as shown in Fig. 4. Operation of the booster is governed by an independent air valve in the cab, thus in no manner interfering with the engineman in his method of running the locomotive, enabling him to use or cut out the booster at will as road conditions may indicate to be desirable. The booster cannot be started except when the main throttle is open and if the locomotive is shut off the booster

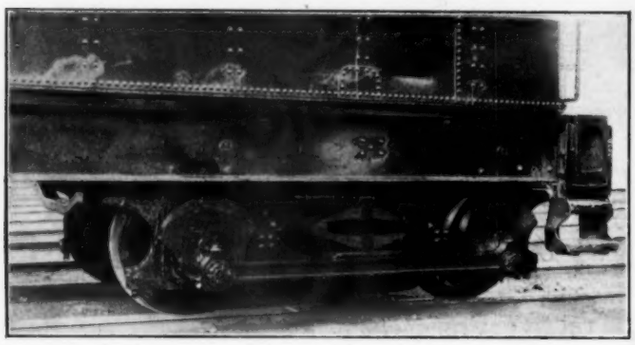


Fig. 3—Completed Truck as Applied Under Tender

is automatically thrown out of gear. Barco joints are fitted in the steam pipe between the locomotive and the tender to give the necessary flexibility at this point.

The steam on its way to the engine entrains the booster engine transmission gears. The fact that superheated steam in the locomotive steam pipe is simultaneously the motive agent of the booster and the controlling power effecting the meshing of the gears, produces practically perfect synchronization of effort of the locomotive and booster engines and also provides an elastic cushion for disengagement should excessive stresses be set up within the gears. The steam from the booster is exhausted direct, without pipe couplings, into a simple feed water heater located in the tender tank. The gear ratio between the booster engine shaft and the tender axle is 1 to 4.25, and the wheels are 33 in. in diameter. The rated tractive effort with 210 lb. steam pressure, based on the formula commonly used for locomotives, is 12,200 lb.

The locomotive to which the booster has been applied is

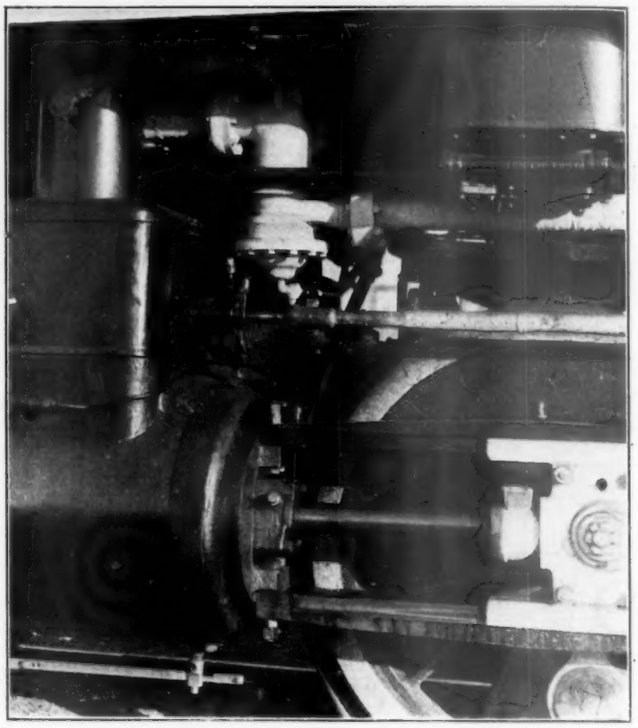


Fig. 4—Steam Pipe to Booster and Air Operated Valve

shown in the photograph at the beginning of this article. It is of the Consolidation type, the weight of the locomotive being 207,150 lb. and the rated tractive power 42,100 lb. developing a maximum draw bar pull of 36,000 lb. on level

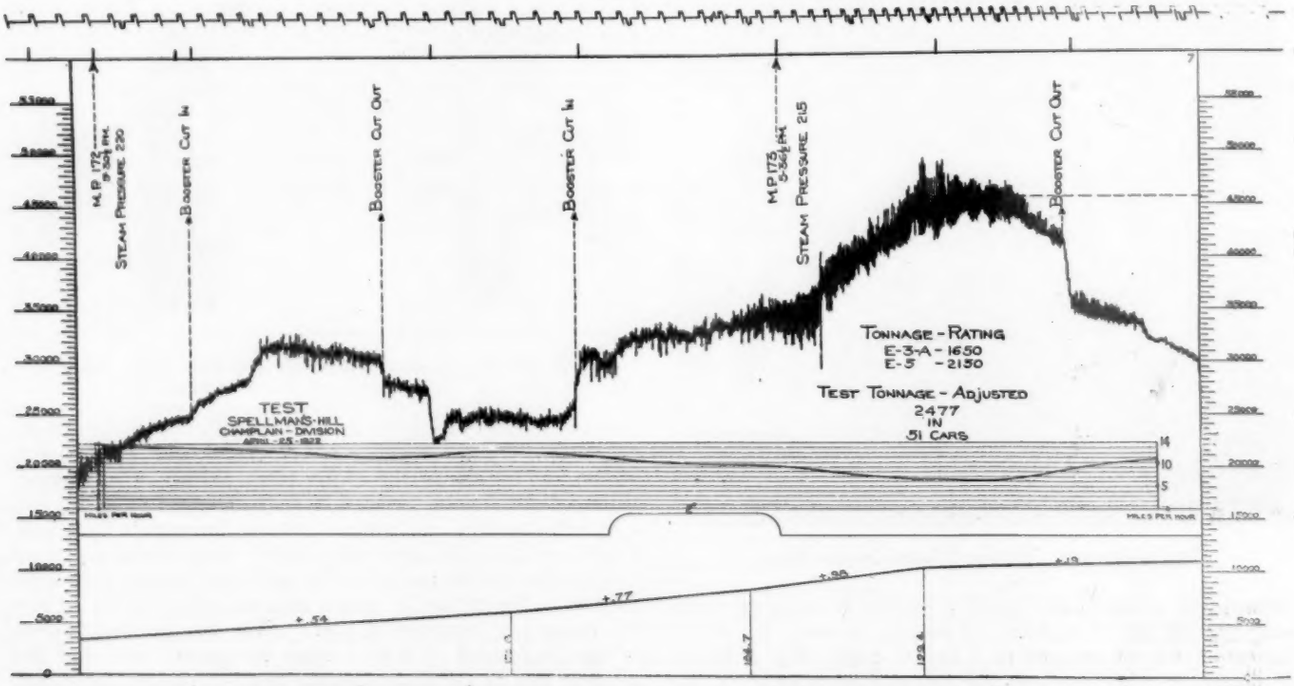


Fig. 5—Dynamometer Chart Showing Operation of Booster on a Ruling Grade

track. The weight of the tender when empty is 58,800 and when loaded 120,800 lb.

To determine the results that can be obtained in actual service from locomotives equipped with the booster, tests were made over the Pennsylvania, Susquehanna and Champlain divisions. A photograph taken from the dynamometer chart on the controlling grade on the Champlain division is shown in Fig. 5. The increase in tractive power due to the booster is clearly shown in the draw bar pull curve. The standard rating for this class of locomotive, without the booster, on this division is 1,650 adjusted tons, while the tonnage of the test train was 2,477 adjusted tons in 51 cars, an increase of 48 per cent.

An analysis of the various tests conducted with the booster developed the following principles:

When superheated steam is used as the motive agent in the

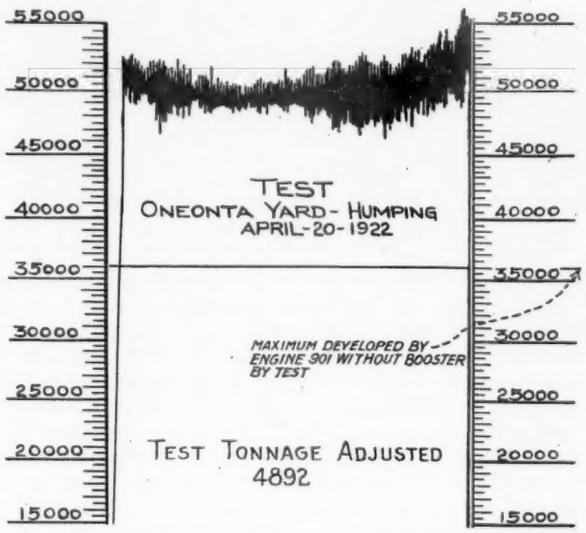


Fig. 6—Chart of Tractive Effort of Locomotive with Booster Pushing Over a Hump

booster, and advantage is taken of the opportunity thus afforded for using steam expansively in the locomotive cylinders, no difficulty is experienced in maintaining practically constant steam pressure.

The use of steam for the gear operating cylinders as well as for supplying power to the locomotive and booster cylinders, gives a complete synchronization of effort between the primary and secondary engines.

The results of the tests also clearly demonstrate the following operating advantages resulting from the booster application:

The tonnage which the locomotive can haul is increased; abnormal stresses on draft gears and equipment are decreased, and more prompt and constant acceleration is effected. Tire wear and rail wear, due to slipping of the locomotive driving wheels, are decreased. The average speed over grades is increased and grades may be equalized without a very heavy capital expenditure. The booster makes it possible to haul increased tonnage over divisions where the trainload is now limited by the weight of locomotives which the bridges can safely carry. The location of the booster is such that no delay in turning of power need be occasioned by repairs. The addition of the geared power unit on the tender permits of using a lower factor of adhesion in locomotive design. The booster also effects a saving in fuel by reducing the time required for movement over the division, and by making it possible for a smaller locomotive to do the work of a larger type.

Freight Car Loading

WASHINGTON, D. C.

FREIGHT CAR loading during the week ended July 8 showed the effect of the Fourth of July holiday by a reduction to 718,319 cars, as compared with 876,896 the week before but this still represented an increase of 77,784 as compared with the corresponding week of 1921, which also included a holiday, when the loading amounted to 640,535 cars. In the corresponding week of 1920 the total was 796,191. On the basis of a five-day week the average daily loading during the week of July 8 was 143,664, as compared with 146,149 cars for a six-day week the week before. As a holiday usually represents a loss of more than a single day this leaves only a slight decrease to be possibly accounted for by the first week of the shop strike. As compared with the corresponding week of 1921 increases were shown in all districts and in all classes of commodities except grain and grain products and coal. Coal loading, 68,996 cars, was about 26,000 cars less than during the week before and 54,974 cars less than during the corresponding week of 1921. The summary as compiled by the Car Service Division of the American Railway Association follows:

REVENUE FREIGHT LOADED

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. WEEK ENDED SATURDAY, JULY 8, 1922

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L.C.L.	Miscellaneous	Total revenue freight loaded: This year 1922	Corresponding year 1921	Corresponding year 1920
Eastern	1922	7,924	2,303	5,545	2,074	4,597	6,842	59,946	73,384	162,615	.....	.....
	1921	5,997	2,164	34,231	630	3,748	2,025	47,961	56,570	.....	153,326	190,062
Allegheny	1922	1,743	2,037	12,793	4,265	2,548	11,396	44,748	61,375	140,905	.....	.....
	1921	2,188	2,159	36,660	1,798	1,901	6,010	37,824	40,643	.....	129,183	162,976
Pocahontas	1922	151	173	22,945	272	1,150	22	4,775	3,272	32,760	.....	.....
	1921	151	190	17,394	93	1,112	11	4,256	3,166	.....	26,373	31,561
Southern	1922	3,803	1,971	15,231	815	16,753	1,175	31,978	36,310	108,042	.....	.....
	1921	3,526	1,973	16,245	396	12,313	313	31,370	32,408	.....	98,544	117,178
Northwestern	1922	7,142	6,124	6,048	1,729	8,297	34,430	26,224	33,583	123,577	.....	.....
	1921	6,806	5,459	5,071	511	6,765	16,525	23,352	24,913	.....	89,402	132,252
Central Western	1922	9,983	7,333	3,859	401	4,444	1,529	28,913	40,768	97,230	.....	.....
	1921	13,197	7,076	11,611	143	3,834	536	26,697	29,919	.....	93,013	106,639
Southwestern	1922	4,515	1,906	2,575	109	6,947	335	13,556	23,247	53,190	.....	.....
	1921	6,577	1,602	2,758	138	5,006	899	13,123	20,591	.....	50,694	55,523
Total Western districts	1922	21,640	15,363	12,482	2,239	19,688	36,294	68,693	97,598	273,997	.....	.....
	1921	26,580	14,137	19,440	792	15,605	17,960	63,172	75,423	.....	233,109	294,414
Total, all roads	1922	35,267	21,847	68,996	9,665	44,736	55,729	210,140	271,939	718,319	.....	.....
	1921	38,442	20,623	123,970	3,709	34,679	26,319	184,583	208,210	.....	640,535	.....
	1920	29,793	21,897	184,127	9,927	46,011	68,564	141,397	294,475	.....	.....	796,191
Increase compared	1921	.....	1,224	.....	5,956	10,057	29,410	25,557	63,729	77,784	.....	.....
Decrease compared	1921	3,175	.....	54,974	.....	.....	.....	.....	.....	.....	.....	.....
Increase compared	1920	5,474	.....	.....	.....	.....	.....	68,743	.....	.....	.....	.....
Decrease compared	1920	.....	50	115,131	262	1,275	12,835	.....	22,536	77,872	.....	.....
July 8	1922	35,267	21,847	68,996	9,665	44,736	55,729	210,140	271,939	718,319	640,535	796,191
July 1	1922	41,897	28,546	94,748	10,361	61,422	64,776	247,111	328,035	876,896	776,079	891,621
June 24	1922	38,411	29,934	96,960	9,466	64,271	64,284	249,193	325,337	877,856	775,447	911,503
June 17	1922	39,333	29,151	92,136	9,302	64,082	53,822	248,044	324,902	860,772	775,328	916,736
June 10	1922	40,035	29,765	94,824	9,008	62,358	46,372	248,405	315,235	846,002	787,283	930,976

Hearing on Coal Car Distribution Rules

WASHINGTON, D. C.

HEARING WAS begun before Commissioner Aitchison of the Interstate Commerce Commission on July 17 on a proposed revision submitted by the Car Service Division of the American Railway Association of the coal car distribution rules now incorporated in Circular C. S. 31 (revised) together with rules for the rating of and car distribution to other than tipple mines loading bituminous coal. The proposed rules have been generally assented to by the National Coal Association, except as they apply to assigned cars, and the commission has ordered a general proceeding of investigation, consolidating with it its investigation of the distribution among coal mines of privately owned cars and cars for railroad fuel. Representatives of the Indiana and West Virginia state commissions also sat with Commissioner Aitchison and other members of the commission sat in for part of the time.

At the outset the attorney for the National Coal Association and other representatives of the coal operators asked for a continuance of the hearing on the ground that the operators have been so busy in labor negotiations and trying to open their mines that they are not prepared. R. V. Fletcher, general solicitor of the Illinois Central, on behalf of the railroads, declined to join in the request, saying that a car shortage may occur very soon if the coal strike is settled and the railroads desire to have the rules ready for use. He said that because of the strike it may be impossible for some of the operating officers desired as witnesses to appear but that the first witness was ready, A. G. Gutheim, who has recently resigned as manager of the public relations section of the Car Service Division, and who was chairman of the railroad committee that conferred with the National Coal Association on the proposed rules. Commissioner Aitchison then said the hearing could proceed at least that far.

Mr. Gutheim outlined the history of the car distribution rules, the present rules representing a modification of the uniform rules put into effect by the Railroad Administration. He said that they are recommendatory but that so far as the Car Service Division is informed they have been generally observed. Commissioner Aitchison was interested in knowing to what extent they have been in effect and whether they would automatically go into effect in case of a car shortage. Mr. Fletcher said many roads have had very little use for such rules during the past year and a half and some probably now have none in effect but that the old rules would go into effect unless new ones were available and unless restrained in some way most of the roads would probably put in effect the new revised rules which are the subject of the investigation.

Mr. Gutheim explained the desirability of having uniform rules and proper mine ratings, saying that the proposed rules base the ratings on the demonstrated producing and shipping capacity of a mine for the previous calendar month. He also spoke of the desirability of deflating the present ratings, which many operators admit are too high, saying that if they are uniformly too high the effect is not especially serious but that it is not pleasant to have it generally advertised in the newspapers that the railroads are furnishing only a 50 per cent car supply when they know that they are providing a 75 per cent supply.

He also said that the proposed rules require the operators to report the actual mine working time, which gives a more accurate index of the capacity than the tipple time, because some mines by increasing their tipple investment out of proportion to their other facilities, may secure more than a fair share of the cars if their rating is based on tipple time. The rules also propose a reinstatement of the principle that a mine served by more than one railroad shall have a higher rating, which was abolished by the Fuel Administration on the ground that under government control the railroads constituted but one system. However, this matter is now pending before the Interstate Commerce Commission and the roads are willing to put into the rules what the commission decides on this point. Mr. Gutheim also discussed the assigned car rule, saying the only alternative, except confiscation, for railroads that have not been able to make contracts or to obtain coal under their contracts, is to go into the spot market, which is expensive for the roads and has a serious effect on the market. Confiscation, he said, is the worst possible way for a railroad to get the necessary coal, both because of the effect on the owner of the coal confiscated and also because it is uneconomical for the railroad and often gives it the wrong kind of fuel. Also some roads do not handle enough commercial coal to supply their needs if they confiscated it all. Many roads have made a large investment in private coal cars to supply their own needs.

Mr. Gutheim occupied the stand for two days and was followed by Eugene McAuliffe, president of the Union Collieries Company, who advocated ratings based on tipple time. The hearing was then adjourned to August 14.

Business Organizations Urged to Support President's Stand on Strike

BUSINESS ORGANIZATIONS of the country are called upon by the board of directors of the Chamber of Commerce of the United States to take such leadership as will crystalize public sentiment in upholding President Harding in the exercise of his authority for the maintenance of uninterrupted railway transportation. At the same time the board commended President Harding's statement making clear the issues involved in the strike, and urged the administration to use all the power of the government to the end that the supremacy of the law be maintained.

President Harding was informed of the action of the board in a letter written by Julius H. Barnes, of Duluth, President of the Chamber. The declaration of the board, as set forth in the letter to the President, follows in part:

"The Board of Directors of the Chamber of Commerce of the United States commends the statement of President Harding making clear the issues involved in the railroad shop crafts strike. We believe in the peaceful settlement of controversies and due respect for agencies established by law or mutual agreement for securing just and impartial decisions. We believe in the compliance with such decisions by both parties and that the public will trust decisions so arrived at as generally fair and accord them the support of public opinion.

"This strike of a section of railroad employees is against a decision of the government's own agency.

"The attempt of the striking railroad employees to enforce their own views through methods of industrial war should meet the condemnation of all who believe in orderly processes of settlement.

"This country is slowly emerging from a period of unemployment and severe business depression, and cannot patiently view any unlawful interference with its transportation facilities, retarding its industrial recovery.

"We commend the President for his determination to maintain the supremacy of the law and we urge the administration to use all the power of the agencies of the government to that end.

"We call upon the business organizations of the country to take such leadership as shall crystallize public sentiment in upholding the President in the exercise of his authority for the maintenance of uninterrupted railroad transportation and for such local protection and community public order as will secure every man his right to work without intimidation."

British Approve Automatic Train Control

Ministry of Transport Committee Recommends Intermittent Contact Type—Disapproves of Speed Control

THE PRACTICABILITY of train control devices "has been proved beyond dispute by extended trial and actual operation covering long periods" and these devices can no longer be regarded as in the experimental stage, according to the Automatic Train Control Committee appointed by the Ministry of Transport of Great Britain. In its report which was submitted on April 20, 1922, the committee recommended the gradual adoption of the intermittent contact type of train control as best adapted to prevent a large proportion of train accidents directly occasioned by the failure of enginemen to obey signals, which it found amounts to about one-third of the total number. While the committee considered continuous control to possess merit, it was thought to have too many disadvantages to warrant its recommendation. Speed control also was not considered essential because an analysis of the accident records for the past 10 years indicated that only 3 out of 193, or 1.6 per cent, of the accidents could have been prevented by speed control. The intermittent induction type likewise was not considered suitable for British railways because it would require complex electrical arrangements and a considerable addition to the skilled maintenance forces. Any system of train stop or train control must be used to supplement the present highly developed and efficient signal systems and be reasonable in first cost and annual charges for maintenance and renewals. The committee recommended that multiple track lines only (except in exceptional cases, single track) be equipped. This mileage was estimated to be 24,00 track miles. Approximately 23,00 locomotives should be equipped, while track devices would be required for 24,000 distant signals and 38,000 stop signals. The total estimated first cost was £4,660,000 ($20,550,600), with a total annual charge for maintenance and renewals of £407,000 ($1,894,870, based on a rate of exchange of $4.41).

Of 193 accidents analyzed for a 10-year period ending September 30, 1921, the committee said that 71, or 36.8 per cent, could have been prevented by train control and that on the basis of the number of accidents reported by the railways but not investigated by the government, train control "would have a preventive effect, not obtainable by any other means, upon a yearly total of more than 100 cases." The committee did not recommend the use of speed control, saying that "the difficulties arising—* * * * and the need for insuring that the capacity of roads is not injuriously affected by imposing unnecessarily low speed restriction upon express traffic, would, in the opinion of the committee, render such devices unsuitable to British conditions." In discussing the continuous type of control, while the committee felt that such a system would cover practically every risk which such devices are designed to safeguard, other conditions would not make the expenditure justifiable upon surface lines in Great Britain. Therefore, the committee recommended the use of the intermittent contact type, which supplements rather than replaces existing signaling and block telegraph systems.

The use of train control was considered only for multiple track lines handling passenger and mixed traffic because of the security afforded on single track lines "by single line token working, with interlocking of signals and relative tokens, and to the small number of accidents upon single lines. The committee is of the opinion that a case for the adoption of automatic train control upon single lines so worked and protected has not been established although there may be a few special cases where control may eventually be found desirable. It considers also that lines used purely for freight or mineral traffic do not as a general rule call for the adoption of automatic train control."

The committee was instructed to enumerate the possible functions of train control as it relates to railway conditions in the United Kingdom; prescribe requisites which the devices should meet; examine those under trial; recommend others which are or may become available during the period of investigation and form conclusions on its adoption with regard to its advantages and the cost involved.

Three Early Conclusions

Three of the earliest general conclusions unanimously arrived at by the committee were: (1) That existing traffic facilities and line capacity must not be injuriously affected by the general introduction of automatic train control; (2) that any acceptable method of control must be such as can be fully developed in conjunction with the highly developed block working and signaling systems on the British railways and (3) that the introduction or extension of any system of control could not be recommended unless a standard, in respect to track and locomotive apparatus, be first decided upon, which would enable the desired effects to be produced upon all locomotives, whether on home or foreign lines.

Calling attention to the high degree of security attained on British railways in the past, the committee points out that in recent years the growth of traffic has made it necessary to shorten block sections in order to increase track capacity without incurring the cost of constructing new interlockings or additional lines. This has resulted in the adoption of track circuits, electric interlocking and other safety devices "to supplement the powers of observation and memory of signalmen." Continuing, the committee says that "no general action, however, has been taken to provide appliances for obtaining additional security against mistakes by enginemen, although they must have been affected, possibly to an equal extent with signalmen, by growth of traffic and altered conditions of working. The functions of automatic train control * * * are broadly to assist enginemen in the proper observance of signals and regulations and to safeguard liability to train accidents which may arise from failure in this respect." In the opinion of the committee, train control can no longer be regarded as being in the experimental stage. "The question is rather whether its adoption is ex-

pedient in the interests of safety, and financially possible."

Applicability to British Railways

In discussing the applicability of train control and its adoption on British railways, the committee considered it from the standpoint of (1) the conditions, whether technical, climatic or physical, which govern the conduct of railway traffic and which may render special treatment necessary; (2) the degree of safety existing, and the extent to which additional security is desirable and can be obtained; (3) the methods of control which appear most suitable for the purpose and (4) the cost of installation. In this connection the committee obtained the views of responsible officers and a number of locomotive inspectors and enginemen of standing and experience; it analyzed accident statistics furnished in government returns and by certain railway companies; systems of train control in operation on the Great Western, the North Eastern, and the Great Central were inspected and studied in detail and the experimental installations on the London & North Western, the Great Eastern and the London, Brighton & South Coast were also inspected. Estimates were obtained from railroad companies and inventors, which were based on present day prices, but without allowance for quantity production.

Relation of Block Signaling to Train Control

The committee, commenting on certain outstanding features in the working conditions, equipment, and methods of block signaling upon British railways, called attention to those peculiar to Great Britain and which needed special consideration. All are factors which have to be allowed for satisfactorily in considering the expediency of automatic train control. They are as follows:

"(a) The dissimilarity in brake power of trains. Three classes of trains have to be provided for, viz., passenger and express goods, which are fitted throughout with continuous power brakes; freight trains, which have only the locomotive fitted with the power brake; and mixed trains in which a certain proportion of unfitted freight cars may be attached to fitted passenger cars, and partially fitted freight trains with which the proportion of fitted cars is variable.

"(b) The speed maxima likely to be attained on level road by various classes of trains may differ as widely as 20 and 80 miles an hour.

"(c) The standard block interval or overlap (440 yd) has been fixed without any regard to speed or gradient. On level or falling gradient, therefore, if the brake, owing to inattention, etc., on the part of the engineman, is not applied until a stop signal at danger is actually reached, the speed of the train may be such that it will not be brought to a standstill, even though full brake is exercised, until a train has passed beyond the clearing point and entered the danger zone.

"(d) The liability to bad atmospheric conditions, such as fog, falling snow, etc., and the consequent difficulties that enginemen have in observing signals, have necessitated the use of a manual fog signal, supplementary to wayside signaling, without which congestion, amounting even to complete stopping of traffic would inevitably result.

"(e) The high frequency and complex character of traffic in many railway areas.

"(f) The number of lines either jointly owned or used by different railway companies.

"(g) Existing variations in structural and load gages will present difficulties in adopting a uniform system of automatic train control unless these are foreseen and provided against. This point also calls for special consideration in connection with the electrification of railways."

Devices to Prevent Mistakes by Enginemen

Continuing an abstract of the report, the committee says that all devices designed to prevent accidents primarily due to mistakes of enginemen obtain their effect either indirectly or directly as follows:

"(a) Indirectly: By automatically providing either on the train or on the track, distinctive visual and audible indications, supplementary to those given by the wayside signal. Reliance for necessary action to avoid danger is, with these inventions, still placed upon enginemen, and appliances of the kind are often described as cab or fog signaling devices.

"(b) Directly: 1. By the automatic application of the power brake. In this case it can be arranged that enginemen either have the power to release the brake at any time after it has been applied, or do not have the power of doing so until the train has come to rest. Appliances of this nature are indifferably termed 'train stops' or 'train control' devices.

"2. By automatic speed control. In this case the brake is applied at any desired point if the speed exceeds a prescribed rate, and cannot be released until either the train has come to rest or the speed has been reduced to a predetermined limit. All these effects can be produced either singly or in combination."

Continuous Train Control

The committee next divided the devices into two general types: "continuous" and "localized" or "intermittent." With respect to the continuous type of control the committee says:

"(a) A continuous type of control aims at entire and constant protection of the train at all stages of its journey against every risk of collision, either with other trains, or in some cases, with earth slides; and, as a general rule, against risk of derailment due to rail breakage, lack of continuity of track, washouts, etc. Devices of this kind are essentially electrical, and usually, though not invariably, of the non-contact type so far as the control mechanism is concerned. They are dependent on complete track circuiting or its equivalent. The outstanding advantage of a control of this type is that it can be made to cover practically every risk which automatic train control can be expected to safeguard.

"There are, however, the following arguments against the adoption of this form of control upon British railways:

"1. The first cost of engine and track equipment is higher than that required for localized control.

"2. The cost and difficulty of supplying electrical energy to all railways in the country in such a form as to be suitable for a standard system of control, is likely to be prohibitive, and would delay installation almost indefinitely.

"3. Although it can be arranged to exercise control at signal locations, its function, broadly speaking, is to provide a substitute for, rather than addition to, existing systems of signaling and block workings, which have already been installed at considerable cost, and have reached a high state of development.

"4. Maintenance would be costly and necessitate the use of a large number of skilled workmen.

"5. The principle of action in apparatus of this class is that electrical energy must be constantly supplied to the train during the whole of its journey. If this energy is cut off, the train is then unable to proceed. Its energy may be cut off for two reasons: (a) Because it is unsafe for the train to proceed owing to some obstruction, etc., on the line ahead; or (b) in consequence of failure in the source of supply, or break-down of the control apparatus.

"No form of automatic train control can be considered wholly immune from risk of failure such as described in (b). The continuous control systems which have been examined require the use of comparatively delicate locomotive apparatus. Such apparatus is more likely to be affected by the vibration and shock of ordinary working conditions than the more robust apparatus used in localized systems. Although failures from this cause would doubtless be on the side of safety, they would cause traffic delay. With regard to the breakdown of the main electrical supply, such a contingency would be serious in a continuous control system handling a frequent service of trains, as all traffic would come to a standstill in the area concerned. Failures from either of the above causes would necessitate arrangement to enable release from the control to be effective. The difficulty and risk of accident attached to such a provision will be apparent, particularly when the main electrical supply fails."

Localized or Intermittent Control

"In the light of the foregoing disadvantages, the committee is of the opinion that expenditure to the extent necessary for continuous control would not be justifiable upon surface lines in Great Britain. On the other hand, in the case of an entirely new railway system, or on railways upon which appliances are less complete, or where accidents of the class preventable only by continuous control are comparatively common, this type of control might be worthy of consideration. The attention of the committee has therefore been directed to localized control, which supplements rather than replaces existing signaling and block telegraph systems. Localized control can be either of the non-contact or contact type.

"The non-contact type is essentially electrical, and although it has the advantages consequent upon the avoidance of any physical contact between track and locomotive apparatus, it necessitates the use of somewhat complex electrical arrangements, entails a

considerable addition to the skilled maintenance staff, and is likely to be more expensive, both in first cost and upkeep, than the contact type. There is also a difficulty in arranging for the production of more than two distinctive effects.

"The contact type is the best known and most developed. Despite the inherent disadvantage, in regard to shock effects, which is common to all forms of contact control, apparatus of this nature has proved reliable after many years of operation under working conditions, and capable of withstanding satisfactorily the effects of high speed traffic. Three indications can readily be provided, viz., 'clear,' 'warning,' and 'danger,' and alternative methods for obtaining brake release can be arranged. Devices of this type do not necessarily require either primary or secondary batteries on the locomotive. In conjunction with local track circuiting, this type of control can be used with automatic and three-position signaling. Moreover, as track circuiting is extended, the control exercised by any localized device, although not strictly continuous in character, will confer nearly all the benefits obtainable from the continuous system.

"To safeguard shock effects in the case of contact devices at wayside signal locations, locomotive and track elements used to obtain control of tracks at distant signals should be more robust than those at stop signals. Trains are authorized to pass, and do pass, distant signals at high speed, whether they indicate 'clear' or 'warning.' It follows, especially if separate indications for warning and clear are required, that contact between locomotive and track elements will be of high frequency. On the other hand, the occasions upon which trains pass stop signals at danger are comparatively rare, and it is not considered necessary for the stop signal apparatus to provide more than one effect, i.e., 'danger.' In special cases a 'clear' indication can, if required, be provided at stop signals by other means, e.g., hand signaling. While, therefore, means for detecting integrity and correct position of the track mechanism for affording control at stop signals will be required, to insure that contact is made when enginemen pass them at danger, it is not a matter of primary importance if damage to the apparatus should result from contact between locomotive and track elements at such signals."

Speed Control

"The employment of speed control and time element relay devices, in conjunction with other indirect or direct methods already mentioned, has been very fully considered by the committee, especially in relation to the outstanding features which characterize British railways. It is argued with some cogency that an appliance either of one character or the other is necessary, because the clearing point, which defines the length of overlap in advance of home signals, etc., is often too close to insure, in all conditions of gradient, speed, and brake equipment, that a train will be stopped by a full application of the power brake when the danger point is reached.

"With some well-known speed control devices, the conditional character of release would, in certain conditions, impose restrictions in the rate of speed unacceptable to British practices and unnecessary for safety. There is not only the dissimilar extent of power brake equipment upon trains to be remembered, but also the variation in speed maxima, in combination with gradient effect. It is common practice for the same engine to be used for hauling fully fitted passenger and unfitted freight trains. Consequently, an engine working a passenger train on one trip might require a speed control set to act at 40 miles an hour, and on another trip hauling a freight train, the device would have to be adjusted for a different speed, of, say, 20 miles an hour.

"Again, a time element relay arranged to apply the continuous brake to a passenger train which approaches a home signal at danger at a higher speed than, say, 55 miles an hour, would not furnish a safeguard to an unfitted freight train approaching the same signal at a very much lower, and yet, dangerous speed. Moreover, with time element relay appliances there is always in existence an element of danger. A train may be traveling at a comparatively slow rate of speed when the first point of contact on the track is made and afterwards accelerate, so that, although the time occupied in traversing the measured length of track is not less than that for which the apparatus is set, its speed at the moment it passes the second point of contact is considerably higher than that calculated to be safe in the event of the signal in advance being at danger.

"The difficulties arising from such conditions, and the need for insuring that the capacity of roads is not injuriously affected by imposing unnecessarily low speed restrictions upon express traffic, would, in the opinion of the committee, render such devices unsuitable to British conditions. Moreover, it will be seen that out of 193 accidents which have been fully analyzed, in only three (or 1.6 per cent) of the whole number could it be said that a speed control device would alone have proved remedial. Such cases of accidents can, in the opinion of the committee, be adequately safeguarded, if not entirely prevented, by installing a train control device, either of a permanent or temporary character, which would provide an audible indication, as well as a brake application, to remind enginemen of the existence of a speed restriction over any curve, crossing, etc., in advance.

"The question of the utility of any form of automatic train control as a means for preventing buffer stop collisions has been carefully examined. It has generally been recognized, and the analysis of accidents reported upon during the past 10 years confirms the view, that the majority of buffer stop collisions take place at low speeds, seldom exceeding 5 or 6 miles an hour. Collisions at higher speeds are of rare occurrence, and are almost entirely due to brake or pump failures, or to lack of continuity of the power brake upon a train. For accidents of this description no remedy could be found in any form of automatic train control. * * *

Analysis of Accidents

"An analysis of accidents reported upon during the 10 years ending September 30, 1921, furnishes information with regard to the preventable character of typical accidents upon British railways. It will be seen that the 193 cases analyzed have been divided as follows:

"A.—Accidents of various types (including buffer stop collisions) for which automatic train stop or train control is not likely to afford any remedy—73. Percentage, 37.8.

"B.—Train accidents due mainly to signalmen's errors, which are preventable by such well-known appliances as track circuit, electrical control of signals, etc.—49. Percentage, 25.4.

"C.—Train accidents mainly caused by failure of enginemen, which some form of train stop or train control with automatic application can alone prevent or beneficially affect—71. Percentage, 36.8.

"The 71 cases of accidents under C have been allocated under three heads:

"1. Derailments due to speed upon sharp curves, etc., for which speed control would be the best remedy, 3. Percentage of these cases, 4.22; percentage of all cases, 1.6.

"2. Miscellaneous cases, such as collisions with platelayers' trollies or other vehicles standing in the section between block posts, and derailments due to switches being out of position, or to rail breakages. For these classes of accident either a form of continuous control is necessary or localized control combined with continuous track circuiting and signal interlocking. Number, 12. Percentage of these cases, 17.0; percentage of all cases, 6.2.

"3. Train accidents directly due to failure of enginemen to observe or obey signal indications. This type of accident is preventable either by localized or continuous control. Number, 56. Percentage of these cases, 78.87; percentage of all cases, 29.0."

The committee considers that on a very conservative estimate, automatic train control would have a preventive or beneficial effect, to the same percentage as is shown in the foregoing tabular statement, upon a total number of accidents at least 10 times as great as those actually inquired into.

Relative Value of Train Control at Distant and Stop Signals

"The evidence of both railway officers and men was generally in favor of some form of automatic train control, as a preventive measure against accidents of the class under consideration. But with regard to the relative value of train control at distant and stop signals, there are two distinct schools of thought. One, perhaps the older, school considers that the provision of control at distant signals is indispensable for safety; and that control at stop signals is of quite minor importance. This view is held very strongly by some of its advocates, so much so that it is thought that, if observation by enginemen of distant signals can be secured, security will result in many cases of accidents. The other school regards control at stop signals as of first importance, and control at distant signals as of secondary value. The main points in the evidence may be briefly summarized as follows:

"(a) In respect of stop signals—the weight of evidence was in favor of control by means of a full brake application when danger was indicated, but against any audible indication.

"(b) In respect of distant signals—a partial brake application combined with an audible indication was favored by the majority for the warning position.

"(c) There was unanimity against the utility of visual cab signals, with which the general opinion of the committee concurs.

"The committee is in no doubt respecting the relatively higher value of control at stop than at distant signals. Further information obtained from the critical analysis of accidents confirms this view. In the 56 cases in which it is considered that beneficial results might have been expected from a system of automatic localized train control, it is shown:

"1. That control at distant signals would in the circumstances have been necessary as a preventive measure in 7 instances.

"2. That control at either a distant or stop signal would have proved effective in 18 instances.

"3. That control at a stop signal, either home, starting or advance, would have been necessary in 31 instances.

"The above figures prove conclusively that control at the selected stop signals is an essential feature of automatic train control. * * * The committee finally agreed that in general, and especially in areas liable to bad atmospheric conditions, sufficient provision for safety against preventable train accident due to failures of enginemen cannot, in the existing conditions, be made without recourse to train control at distant signals also.

"There are three alternative methods of train control at distant signals:

"1. The first and simplest, which provides 'location' effect, is to provide a track appliance fixed in character which shall give one and the same effect on locomotives whenever the distant signal is approached, irrespective of its position. Advocates of this method were particularly unanimous that a brake application and audible signal should be combined for the desired effect.

"2. The second method is to provide an appliance which shall give these warning effects, whenever distant signals are passed in the 'warning' position; no effect being produced when the signal is in the 'clear' position. This method necessitates, if the track appliance is fixed in character, the employment of electrical energy for the purpose of differentiating between the warning and clear positions of the distant signal. It is consequently more costly, both as regards track and locomotive apparatus than the 'location' system. * * *

"3. The third method, advocated by a large majority of the witnesses examined, provides train control in the direction of two separate effects for the warning and clear positions, respectively. The clear effect to be an audible signal distinctive from that given for the warning effect, but with no brake application. The increase in cost of this over the second method (presuming the track apparatus is fixed in character) is small, and affects the locomotive apparatus only. * * *"

Fog Signaling and Train Control

"Train control at distant signals should be considered in relation to manual fog signaling. The questions that arise are: Will control prove an acceptable substitute for fog signaling; and if so, what effects must train control produce to prove acceptable? On the first point, though some of the witnesses expressed doubt, the answer was in the affirmative by a large majority of both officers and men. On the second point, it is clear, at all events, in areas subject to fog, that train control must produce effect on all occasions when the train passes distant signals, otherwise, one of their functions, i.e., to give geographical information to enginemen of their whereabouts, will only be performed when these signals are passed in the warning position. With this minimum requirement, both the first and last methods comply, but the second does not.

"There was considerable diversity of opinion whether it is essential, in order adequately to meet all fog signaling requirements, that separate effects must be produced by train control to differentiate between the clear and warning positions of distant signals. It appears to the committee to be more a traffic than a safety question. In some areas, no doubt, existing traffic facilities would be reduced unless a dual indication were provided.

"As a general rule, the committee considers that train control at distant signals, in order adequately to meet fog signaling requirements, should provide distinctive effects for both clear and warning positions. Over large and well defined districts, however, where there is no liability to fog, the 'location' method, whereby the warning indication only is given on approaching all equipped distant signals, whatever their position, may prove sufficient. * * *"

Outside of the financial effect which the committee states would not be so great as might be expected, it continues, saying, "there are certain beneficial effects which it may be anticipated will result from the use of control wherever possible, in place of manual fog signaling. These are:

"(1) Manual fog signaling is not free from special danger to the personnel employed. A number of fatalities occur yearly to men employed in visiting fog posts, and injuries result to fogmen from the explosion of detonators. The elimination of this class of accident proportionately to the degree of substitution of control may be anticipated.

"(2) Owing to the sudden appearance of fog, it is not always possible for fogmen to be at their posts when their services are essential. Enginemen in such conditions have an anxious time. Sometimes they receive no geographical indication of their whereabouts and are in complete uncertainty whether they have passed a signal, and have missed seeing the fogman's green light, or whether the absence of an explosion or green light is to be explained by the fact that the fogman has not arrived at his post. Control producing both an unmistakable clear and warning effect would do away with this sense of insecurity, and undoubtedly improve safety conditions.

"(3) Failures of detonators to explode, and of enginemen, especially in the case of double-headed trains, to hear the sound of detonations, as well as mistakes made by fog-signalmen themselves, are not unknown under the manual system of fog signaling. A betterment in all these respects may undoubtedly be expected from the introducation of control.

"(4) Some additional facilities to traffic working may be counted upon."

Train Control Considered Essential

"As the result of this general investigation of the subject matter, the committee has found that there is a *prima facie* case for automatic train control upon British railways, as the only means for obtaining greater security against the class of train accident, which in general results from failure on the part of enginemen.

"They consider that the method of automatic train control most likely to suit existing conditions upon British railways should supplement rather than replace existing block telegraph and signaling systems, and comprise:

"(a) Automatic train stop, located at or near selected stop signals, which shall, in the event of a train passing such signals, when they indicate, or should indicate, danger, bring the train to a standstill.

"(b) Automatic warning control at unworked distant signals, also at worked distant signals, whenever these are passed in the warning position, and at such other places where danger from too high a speed may be anticipated. In addition to the above, which the committee regards as the minimum necessary to obtain adequate security against train accident, it is held that the selected system of control should be capable of producing a distinctive audible effect for the clear position of worked distant signals, in order to meet conditions of fog signaling."

Requisites for Installation

"In compiling these requisites, due weight has been given to safety requirements, as well as to the following considerations:

"(a) Standardization of equipment to obtain uniformity of effect upon all railways.

"(b) Future development in the direction, for example, of three-position and automatic signaling, and extended electrification.

"(c) Lowest cost compatible, with due regard to safety conditions.

"1. The control apparatus should be constructed to work in conjunction with any system of fixed signaling, mechanical, power worked, or automatic.

"2. To be so constructed in respect of both track and train elements as to insure the undermentioned effects being produced upon locomotives* when running either upon home or foreign lines in Great Britain.

"3. The control to be capable of producing three alternative effects, namely, (a) danger, (b) warning, (c) clear, as follows.

"(a) The danger effect to be produced at a two- or three-position stop signal, when this indicates or should indicate danger, and to consist of a full application of the power brake. In the case, however, of purely automatic signals, the danger effect is required to be produced only when the signal correctly indicates danger. The brake application to be capable of release by the engineman, only by an action entirely distinctive in character from that required for the release of the warning brake application.

"(b) The warning effect to be produced at a two-position distant signal or at a three-position signal, whenever these indicate or should indicate caution, and to consist of an unmistakable brake application and audible warning. The brake application in this case to be capable of immediate release by the engineman. The action for brake release in respect of both 'danger' and 'warning' effects must necessarily reset the locomotive apparatus in the normal receptive position.

"(c) The 'clear' effect to be produced at a two-position distant signal or at a three-position signal, when these correctly give the clear indication, and to consist of an audible signal distinct from that required for the warning effect. The control of this locomotive apparatus to be in the hands of the engineman, so that he can render it operative or inoperative at will.

"The clear effect shall be produced only when this condition is indicated both by the signal concerned and by the position in the frame of the corresponding signal lever; and in the case of automatic or semi-automatic signaling also by the condition of the corresponding track controls. In all other circumstances, either the danger or the warning effect, as the case may be, shall be produced.

"4. To be so constructed that the correct position of all track and train elements of the device shall be assured under all conditions of speed, atmosphere, weather, wear, oscillation and loading; and that the device shall operate under all conditions which permit of traffic movements.

*The word "locomotive" wherever used in these requisites includes the leading control vehicle of multiple unit trains, whether steam or electric.

"5. The track apparatus in the event of failure of any of the actuating mechanism, electrical energy, or connections, and in the event of other electrical faults, to assume the danger or warning condition, as the case may be, and give the corresponding indication. The integrity and correct position of all moving parts of the track apparatus, which are designed to come in contact with the locomotive apparatus, must be continuously indicated to the signalman, or detected in the case of automatic signaling. Failure of any portion of the locomotive control apparatus, which prejudicially affects the brake control in connection with the danger and warning effects, to give an unmistakable application of the power brake.

"6. To be capable of operation upon locomotives fitted with air, vacuum, steam or other power brakes, or any combination thereof.

"7. The locomotive apparatus to be such as not to interfere with or impair the efficiency of the normal working of the power brake.

"8. The apparatus to be such that it will be operative when the locomotive is running in forward or backward gear, without involving any action additional to that normally necessary for reversing the direction of travel of the locomotive.

"9. The apparatus to be inoperative automatically in respect of the danger effect when a train passes a signal not applicable to the direction of its movement.

"10. To be of simple standardized construction with easily interchangeable parts so that maintenance, inspection and tests to insure efficiency of all the parts shall be easily carried out. Any part of the apparatus which is liable or designed to be destroyed by shock of impact must be capable of rapid replacement.

"11. To be so constructed and installed as not to constitute a source of danger to railwaymen or passengers.

"12. Where there are a number of signals at any point applicable in the same direction to one road, the track apparatus for that road must be capable of operation in conjunction with any one of the signals in question."

Recommendations Regarding Requisites

The committee has the following recommendations and remarks to make in connection with the requisites:

"(a) Localized (intermittent) control is recommended as more suitable for prevailing conditions on British railways than continuous control. The contact type is selected in preference to the non-contact type. The necessity in this country for a speed control or time element device has not been established.

"Locomotive and track apparatus for train control at distant signal locations must be of a robust and durable character; the track apparatus of the fixed element type. The use of electrical energy for obtaining a distinctive clear effect is acceptable. Locomotive apparatus should preferably not require the carriage of batteries, particularly those of a secondary character.

"For stop signals the train stop apparatus, both track and locomotive, should be of a simpler and less expensive character, the track element preferably of the mechanical movable trip type. In the case of the locomotive apparatus a mechanism of the frangible character would not be objectionable. Overhead train stop or train control devices are not regarded as suitable. The possible development of power working of signals should not be lost sight of in the selection of train stop and train control devices.

"(b) In the opinion of the committee the most suitable position for the track element of train control at distant signals is the center of the four-foot way. The possible effect of the selection of this position upon any scheme for electrification has to be borne in mind.

"(c) Requisite No. 3.—Change of effect: In connection with the release of this effect of control the committee records its preference that the arrangement should be such as will permit of the engineman actuating the release without having to leave the foot-plate of the engine for the purpose, unless the additional expense thereby incurred is considerable.

"(d) To meet the possibility of failure of locomotive apparatus for train control or train stop appliances, the cutout or other device for the purpose should differ essentially from that in use for obtaining the normal stop signal control release, and will require to be protected from unauthorized use.

"(e) For emergency, e.g., pilot, working upon track equipped with control apparatus for one direction of travel only, it will be necessary for railway companies to issue instructions regarding the precautions to be taken for cutting out the locomotive control or stop apparatus as required.

"(f) The requisites do not deal specifically with difficulties which may arise from the adoption of automatic train control in connection with helper engines, double-headed trains, or two trains coupled together. As regards helper engines, it is held that track control apparatus will not be required at signal locations on short and continuous lengths of service rising gradient where helper engines are normally employed at the rear of all trains. This may perhaps render the retention of manual or fog signaling at distant signals located on such grades necessary.

"In localities where, over longer sections of track, with variations in direction and inclination of gradient, automatic train control will no doubt require to be installed, there is a possibility of signalmen returning a track control device from clear to normal before a banking engine in rear of a train, or the second engine of two trains coupled together, has passed it. The committee suggests a last-vehicle or track circuit device would meet the case. In the case of double-headed trains, the committee sees no reason why both enginemen should not be called upon to release their brakes in the event of a train control distant signal warning effect. In the case of stop signals, the likelihood of the signal being returned to danger before the second engine has passed is inconsiderable.

"(g) The effect of the extended adoption of electric traction upon the use of the electrified ramp for distant signal control will require consideration, and special precautions may be necessary to safeguard a false clear effect being given as the result of the ramp becoming energized from an extraneous source. The possibility of alternating current proving necessary eventually for the purpose of energizing the ramp, will be for consideration in the design of the engine apparatus.

Cost of Installation

In estimating the cost of installation the committee has taken the figure of 24,000 track miles as representing the maximum mileage for passenger lines to which automatic train control would in any circumstances require to be applied. Regarding the number of signals and locomotives it estimates as follows:

Distant signals—Equipped with dual application, 18,000; Equipped with warning indication only, 6,000.

Stop signals—Equipped with trip device for "danger" effect, 38,000.

Locomotives—23,000.

The estimated first cost is, 18,000 distant signals at $308.70 each, $5,556,600; 6,000 distant signals at $110.25 each; $661,500; total for distant signals, $6,218,000.

The annual charge for maintenance and renewals at 7½ per cent of first cost, $466,357.50. First cost of fitting 38,000 stop signals at $4,189,500. Annual charge for maintenance and renewals, 7½ per cent, $314,212.50.

First cost of fitting 23,000 locomotives at $441, $10,143,000. Annual charge for maintenance and renewals (10 per cent first cost) $1,014,300.

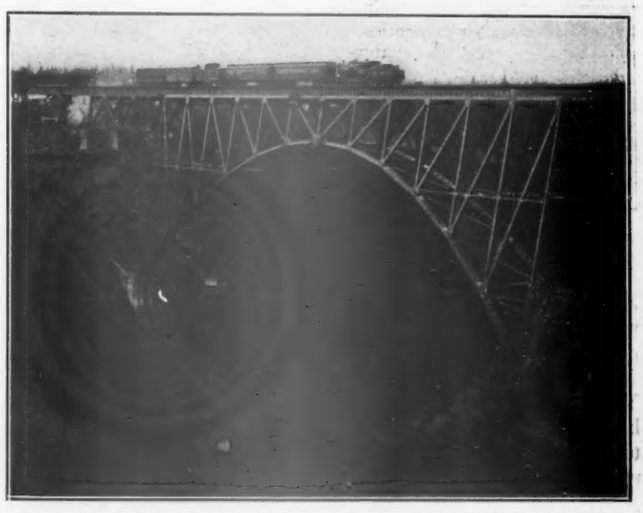
The total cost of the full scheme would appear to be:

Distant signals, $6,218,100.

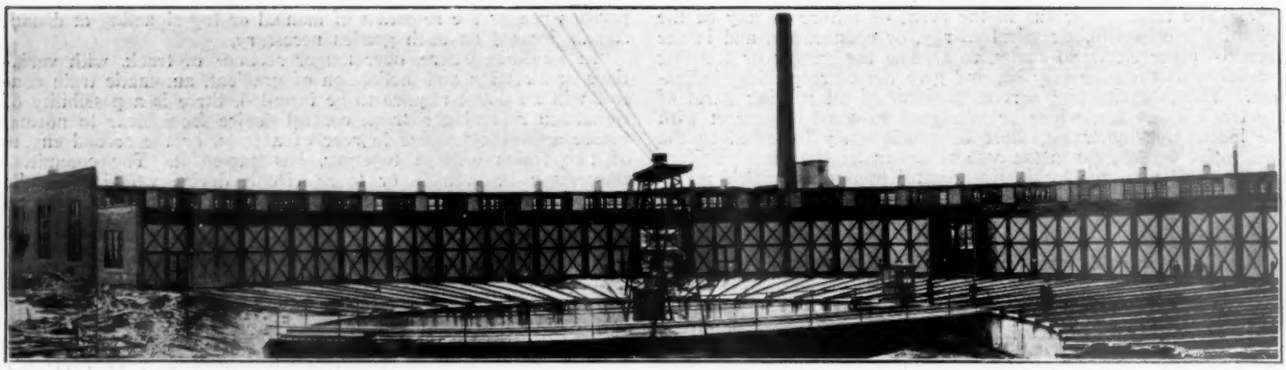
Stop signals, $4,189,500.

Locomotives, $10,143,000.

Total first cost $20,550,600. Total annual charge for maintenance and renewals, $1,894,870.



The Crossing at Hurricane Gulch, Alaska Railroad



A Panoramic View of the Inner Circle of the Enginehouse

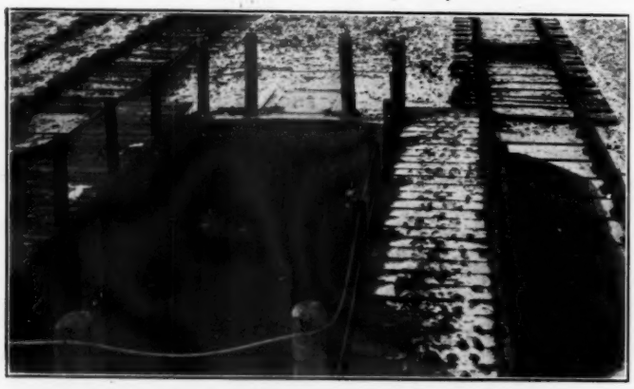
Unusual Ash Pits Feature New Engine Terminal

New York Central Incorporates Interesting and Economical Designs in Solvay Enginehouse Project

THE NEW YORK CENTRAL has recently completed and placed in operation an interesting 30-stall enginehouse and terminal layout at Solvay, outside the city limits of Syracuse, N. Y., for the care of passenger locomotives turned at this division point. The new terminal, which replaces one that had become congested and crowded because of its circumscribed limits within the city, contains many features of economical design, construction and operation which are a departure from ordinary practice. This is notable in the design of the ash pits, which are circular in section, of mass and reinforced concrete and economical both in cost and operation.

Location and General Features of the Terminal

The new terminal had been under consideration for a number of years preceding the war and in 1918 construction was started but on account of financial and other conditions



One of the Wet Ashpits Before It Was Placed in Service

little was done. Work was resumed in 1921 and the project was carried through rapidly to completion. The layout is primarily for the care of passenger train locomotives received from and sent out over the several divisions of the New York Central centering at Syracuse. Some freight power is handled, however, as well as switching locomotives. The terminal is located about 3.5 miles west of the Syracuse passenger station. It adjoins the four-track main line to Buffalo and the two-track line of the West Shore Railroad, also a part of the New York Central.

The terminal includes a 30-stall enginehouse of brick walls and timber roof on concrete foundations which is served by a 100-ft. turntable. All stalls are completely equipped with modern facilities, including electric welding and are exceptionally well lighted, aside from the natural light, by a comprehensive overhead direct lighting system. Portable inspection lights are also provided. Flood lights are used in considerable number in and around the turntable, the ash pits and the coaling station. A modern power plant furnishes hot air for heating, steam and compressed air. A well equipped machine shop adjoins and is a part of the enginehouse, as are the offices, etc. The coaling plant has a rated capacity of 1,000 tons with duplicate hoisting machinery. Four ash pits of the circular type have been installed, giving a capacity for about four days, normal operation between cleanings.

Passenger and Freight Power Are Turned at Different Points

Both the New York Central's four-track main line and the West Shore's two-track main line pass through Syracuse and there is a heavy through passenger and freight traffic over both of these lines. There is also considerable traffic which originates at or is destined for industries in Syracuse and the immediate vicinity. In addition the Rochester division, better known as the Auburn Road, leads to the west, the Ontario division to the north and the Chenango branch to the south. The traffic handled through Syracuse is naturally large and the problem of turning power quickly and efficiently becomes important. Under the method of operation now in use in connection with the new terminal, freight and passenger engines are, with a few exceptions, turned at separate points. Freight power from and to the west, i.e., locomotives used on the Syracuse and Rochester divisions, are handled at DeWitt, a combined engine terminal and freight yard, while those on the Mohawk division (Syracuse to Albany) are handled at Minoa. Both of these terminals are east of Syracuse proper. Other freight power is ordinarily handled at Belle Isle to the west but at the present is being turned along with all of the passenger engines at Solvay.

In more detail, the power now turned at Solvay consists of both passenger and freight locomotives for the following approximate number of trains and divisions over which they pass: The passenger train movement over the Syracuse division is about 30 trains daily each way and the number over

Coaling Station in the Distance at the Right

the Mohawk, its complementary division, is about the same. There are about six passenger trains each way over the Ontario division, about five each way on the Rochester division and about three each way on the Chenango branch. Added to this number of passenger train movements, there are five double header freight trains each way on the Ontario division while from one to three coal trains are received daily from the Pennsylvania or handled by the Pennsylvania from Elmira, N. Y., over the Central's line. Thus 85 or more locomotives are handled daily without taking into account the switching power housed and handled at Solvay. It should be noted in connection with this, that the turning of freight power at Solvay is only temporary and that it is intended solely for passenger locomotives.

The Ash Pits Are of Unusual Design

The ashing facilities at Solvay are easily the outstanding features of the Solvay terminal because of their departure

The Arrangement of the Three Ashpits on the Inbound Tracks

from ordinary practice, their low cost and their ease of construction. The arrangement consists of four wet ash pits of mass and reinforced concrete, built in the form of circular wells. Three of these pits are located under the inbound engine tracks and one under one of the outbound tracks, thus providing ashing facilities for outbound power, an arrangement of which the advantage is obvious.

Certain advantages are accorded to this type of pit which are of importance. They can be built for about $11,000 each, exclusive of water connections and drainage. Three pits, giving the same number of engine positions as would be permitted by a 200 ft. pit, can be built for less than half the first cost of the long pit. Maintenance of traffic not being a necessity, these particular pits were constructed and others can be constructed likewise by forming the circular rim and then excavating inside the shell by means of a crane and clam shell bucket, the weight of the shell carrying it down into position. After the circular shell has reached the proper elevation the bottom and piers can be placed and likewise the section of concrete forming the slope.

As compared with the long 200-ft. pit, there is very much less structure to maintain. In the case of the long pit, 400 lin. ft. of steel girder construction must be maintained, as contrasted with 150 ft. for the three small pits. The storage is concentrated directly opposite the engine positions for the full capacity of the pit, and until any one pit is completely filled, the number of engine positions is not reduced. While the long pit will allow greater storage capacity for the same number of engine positions, nevertheless to utilize the maximum storage capacity of the long pit, the number of engine positions must be reduced for a portion of the time in order to completely fill it, thereby reducing the efficiency of the terminal from an ash pit standpoint. In the circular types, additional storage capacity can be obtained by deepening the pit.

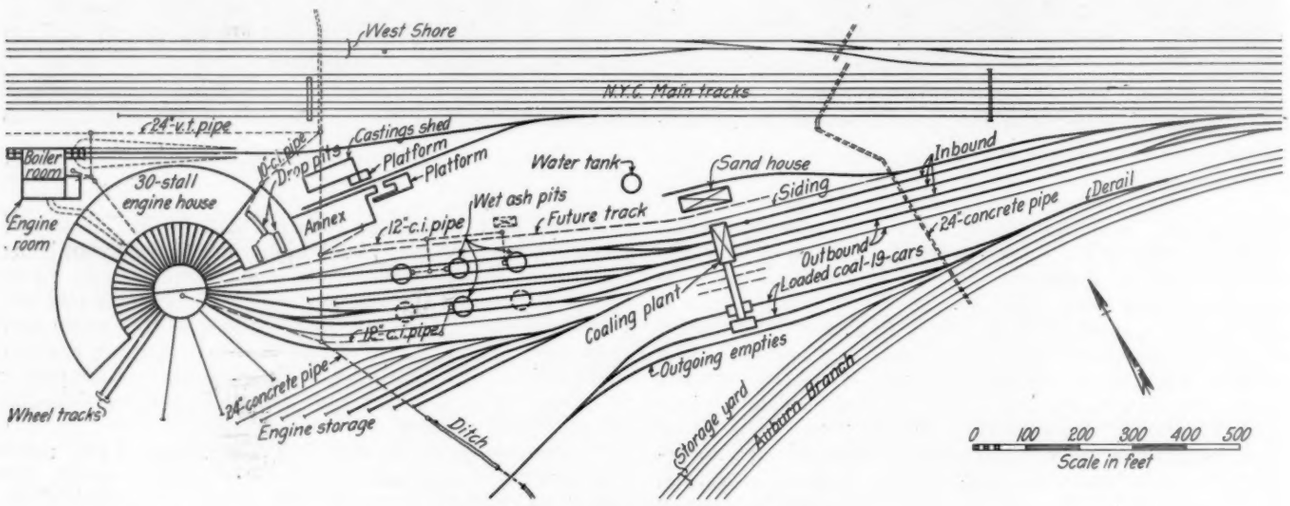
If an extension of plant is required, one or more pits may be added without disturbing the others. In view of the lesser lengths of track supported over or adjacent to the water, a much better opportunity is afforded for protection and a man may cross between the engines without as great an element of risk. On account of the smaller first cost, it is reasonably economical to install pits with walkways on the water side rather than to leave them open or to install gratings. When the circular type cannot be built by the methods described here, an alternate type, somewhat hexagonal in section, has been developed which can be built in place at about the same cost.

Basically the pits are concrete wells with an inside diameter of 32 ft. and with 15-in. walls. The total depth from base of rail to the under surface of the bottom slab is 20 ft. and to the upper surface, 17 ft. 8 in. The outer ring was poured as a unit on the surface of the ground and when the concrete had set sufficiently it was brought to final position. This was done by digging out in the center of the ash pit by means of a clam shell bucket, the pit wall sinking of its own weight as the dirt was removed. Once in position, the reinforcing could be placed for pouring the slab base or floor, which was poured integral with the track supports. The circular wall was not reinforced except at the base which was strongly reinforced by a series of 5/8-in. rods and stirrups, the base being not unlike the bottom edge of some caissons; and at four points around the circumference where the wall was built out to form supporting posts. This is shown clearly in the drawings.

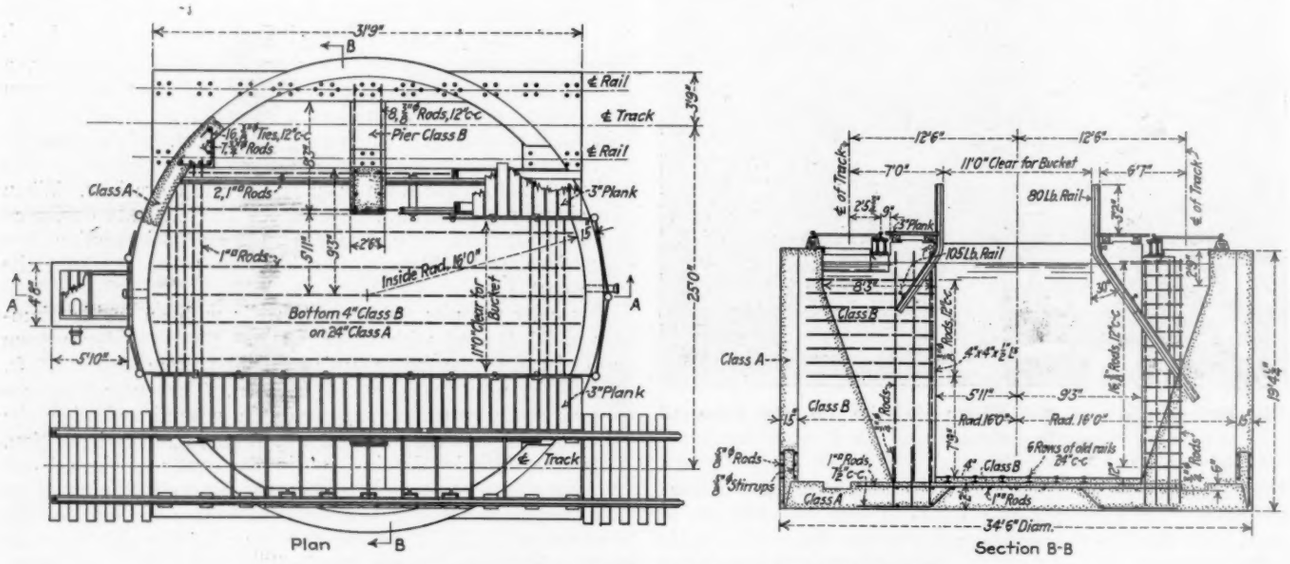
The two lines of rails nearest the circumference of the

pits are each supported upon a concrete sector with a maximum thickness at the top of 1 ft. 10 in., measured along the diameter at right angles to the track center. The inner surfaces of these supporting sectors are perpendicular for a distance of 2 ft. 9 in., after which they slope inward to a maximum thickness of 6 ft. 9 in. Each sector is poured integrally with a small pier extending at a 90 deg. angle from the sector and forming a center support for the inner rail of the track. This pier is finished flat under the supports but is brought elsewhere to a "V," thus diverting the ashes to either side. In order to continue the support under the outer rail to the same distance that the inner rail is supported, concrete blocks 4 ft. deep were poured on the outside of the pit wall. There are four of these blocks, two to each track over the pit.

The tracks over the pit are supported above the concrete by special castings for the lines of rail nearest the circumference and by I-beams on the inner lines. Two 12-in., 55-lb. beams are used for each line of rail, the space between the beams being filled with concrete and the side exposed to the hot ashes being protected by a ¼-in. steel plate specially fitted. The pits are cleaned by a locomotive crane with clam shell bucket, operating on a stub track adjacent to the pit tracks. In order to protect against damage from the bucket six rows of old rails 30 ft. long and on 24-in. centers have been imbedded in the concrete at the bottom of the pit with the ball of the rails slightly above the surface of the concrete. Each side of the opening between the 4 ft. walks on the inner side of the pit tracks has been protected by a series of 80-lb. rails bent at about a 30-deg. angle. These rails are vertical above the edge of the pit but slope toward the walls, thus forming guides for the bucket when it is withdrawn. Each alternate rail is extended and imbedded in the concrete sectors mentioned. The ends of the shorter lengths of the bent 80-lb. rails and the centers of the longer ones are tied together on each half of the pit by a length of 105-lb. rail paralleling the center line of the track while a second line higher up adds to the rigidity of the arrangement. A clear opening, 11 ft. wide, is secured.



General Layout of the New Terminal



A Plan View and Cross Section of One of the Circular Pits

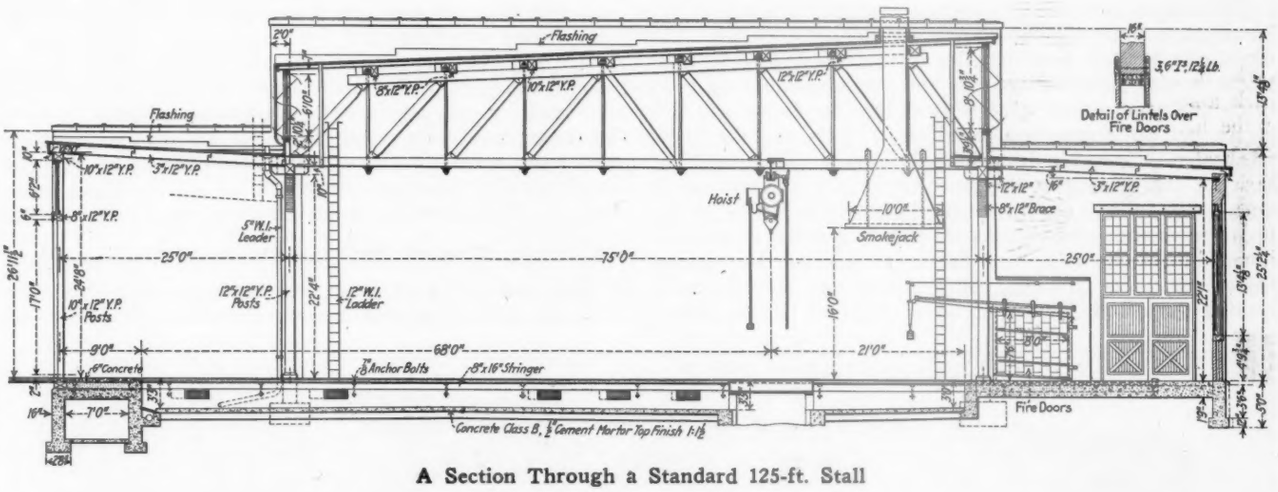
The extended vertical sections of the 80-lb. rails form the posts for the protective "railing" on the inside of the walks. The railing consists of ¾-in. steel cables run through holes drilled in the web of the rail and is carried around the ends of the pits by wooden posts, making a continuous protection.

The two walkways are placed independently in the pit and are built of timber, easily removed and replaced when necessary.

A Well Arranged 30-Stall Enginehouse

The type of enginehouse which has been built at Solvay is one which has become, in a way, a standard on the New York Central. This particular house is a 30-stall structure with mass concrete foundations, brick walls and fire walls, timber posts and a timber monitor roof structure. It is felt on this road that in view of the question of obsolescence and the considerable amount of reconstruction work which is nearly always being carried out around engine terminals in which the location of the enginehouse is often changed, the more permanent forms of completely fireproof structures have serious disadvantages. The road also favors the idea of a minimum number of supporting posts between engine stalls and the elimination of all metal possible in the superstructure.

The enginehouse is a semi-circular structure with an inner radius of 126 ft. 5 9/16 in. With the exception of five stalls at one end which are 125 ft. deep, all stalls are 110 ft. from center line of the door posts to the interior faces of the pilasters in the rear wall. One stall has been constructed as an outbound track through the building; this divides it into sections of 10, 14 and 5 stalls, respectively, each separated by fire walls. The angle between center lines of stalls is 6 deg. 48 min. for all except the outbound track mentioned where the angles to either side have been increased to 7 deg. 15 min. This gives an opening of 15 ft. center to center of door posts on 29 stalls and 16 ft. 11¾ in. for the outbound track, although this section has no doors at front or rear. Each stall is divided into three bays which, in the 110 ft. sections of the house, are 25 ft., 64 ft. and 21 ft., respectively, from the door end. In the 125-ft. 5-stall section they are 25 ft., 75 ft. and 25 ft. The roof is a timber structure carried on 12-in. by 12-in. yellow pine posts. The center bay forms the monitor and this section is supported by timber trusses between stalls. The trusses are reinforced with steel rods in the 125-ft. section, which is chiefly the repair section of the house and little affected by hot gases. The roof over each bay is of the shed type, the slope of the inner bay and the monitor being toward the first line of interior posts and of the outer bay toward the rear of the house. In the 125-ft. 5-stall section the entire roof structure has been raised slightly over five feet, thus increasing the clearance under the monitor section for the use of a monorail hoist of 7½ tons capacity. The effectiveness of the lighting was also improved—a distinct advantage since this section is also the main repair section of the enginehouse.



A Section Through a Standard 125-ft. Stall

A Compact Well-Arranged Layout

Windows of large size have been installed in the rear and end walls, in both sides of the monitor and over the doors of the 125-ft. section. Smaller sash has been installed over the doors of the 110-ft. section. Daylighting is thus well taken care of, there being about 19,000 sq. ft. of windows in the enginehouse and in the 52-ft. by 92-ft. annex which

includes the machine shop, offices, oil storage and quarters for engine crews. The interior electric lighting is also well taken care of. Besides three large drop lights between stalls, six drop lights have been provided in clusters of two with large reflectors, so arranged as to throw the light on each side of the locomotives. These lights are controlled by a switch arrangement on the rear wall. There are also numerous outlets for the use of portable lights. Another installation of interest electrically is the provision at each stall for the use of a portable electric welder.

Engine Pits Form Sides of Hot Air Ducts

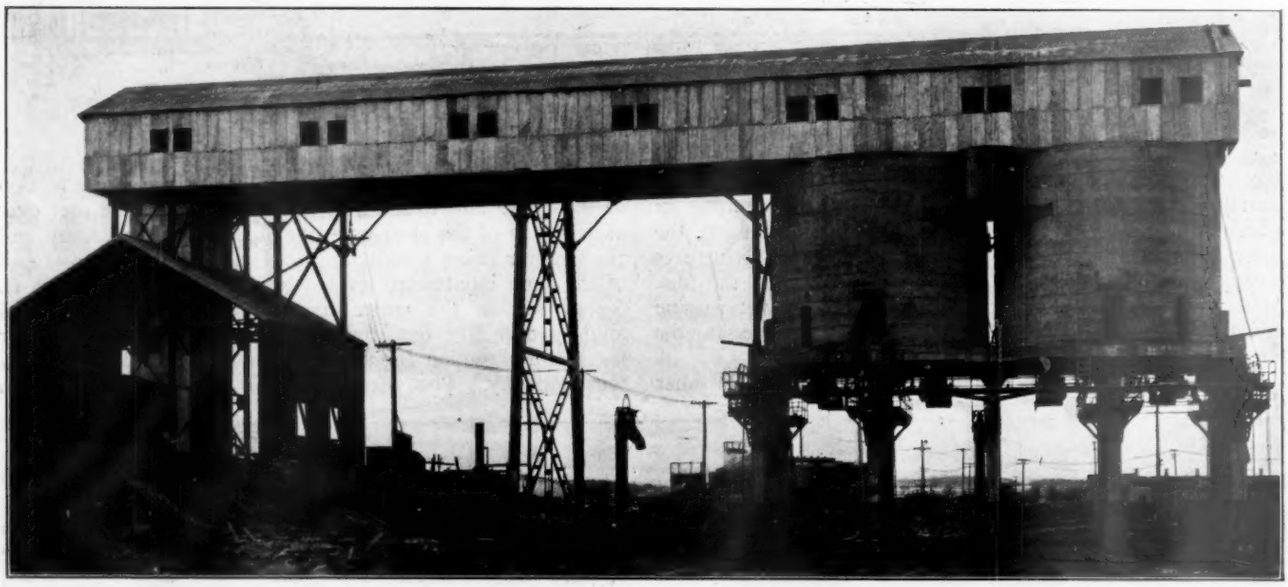
The engine pits are of concrete, crowned slightly at the bottom and drain toward the inner and outer circles. The wheel pits have all been installed in the 125-ft. section, three tracks having driver wheel pits and two tracks having pony truck and tender pits. One wall of the pits forms one side of the hot air ducts through which the pits and the house are heated. These air ducts have five screened openings into each pit and connect at the inner circle with a large hot air duct which follows the line of the inner circle just below the floor system and inside the doors. It is of concrete of variable inner dimensions to secure the most efficient flow of the heated air. The two arms of this duct tap into the main heating duct from the power house adjacent to the engine-house between stalls Nos. 18 and 19, the sides of the pits at this point forming the sides of the duct. The clear height at this point is about 7 ft. 6 in. The junction of the two arms is constructed to divert the air in the proper quantities. This is accomplished chiefly through a "V" or baffle wall located so as to give different dimensioned passageways to either end of the house. The entire enginehouse is floored with six inches of concrete, this flooring forming the top of all air conduits except the feeder extending around the inner circle, over which the enginehouse tracks pass. At these points a reinforced concrete slab 11½ in. thick forms the top and on this is placed 7½ in. of cinders and then the regular floor construction. As a precaution against engines going through the rear walls, an opening has been left in the floor back of the bumpers. This opening is covered with plank flooring which the pony trucks can easily break through, thus effectually stopping the engine.

In addition to the equipment mentioned for the enginehouse proper, each stall is provided with a link in the rear wall by means of which, in conjunction with a special motor and drum on the turntable, dead engines can be hauled into position. Another unit of interest is a portable oil and repair truck used by the enginehouse forces. This truck contains a generous equipment of tools, oils, grease, etc., necessary for the pit work and inspection on the engines. It also contains a special high candle-power inspection light which can be placed in the pit or at any other desired location, greatly facilitating the work. By concentrating all of the various needs of the locomotive, electrical, air brake and other inspectors, and the men and their helpers, it is estimated that a substantial saving has been made in time saved. A test indicated that the amount of walking eliminated by the foreman and his 11 men in one 8-hour period was the equivalent of 43 miles by one man.

The enginehouse, power house and machine shop are completely equipped with all necessary facilities where needed, arranged for easy access. The equipment includes three 400 hp. water tube boilers with space for a fourth unit, pumps, feed water heaters, boiler washing plant, hot air heating coils and large size blower, oil filters and an ash hoist and storage bin, etc. The power house has an inside trestle for coal cars.

A Large, Modern Railroad Designed Coaling Plant

The coaling plant is of reinforced concrete and steel throughout, making a fireproof structure with a rated capacity of 1,000 tons. The actual capacity appears to be somewhat greater than this. The entire design aside from the machinery was prepared by the engineering department of the road with the purpose, among other things, of facilitating the rapid construction of the plant. Coal is delivered in hopper-bottom cars operated by gravity over two tracks and is discharged into hoppers under the tracks from which it is elevated to a conveyor gallery. Duplicate hoisting and conveying machinery has been installed. The storage facilities are in the form of two circular concrete bins resting on a "flat" slab which in turn is supported by 15 concrete posts, all concrete being reinforced. The bin structure spans four tracks and serves six tracks with two coaling spouts per track. The shed over the hopper tracks, the enclosure of the hoisting equipment and the conveyor gallery are of steel construction. The concrete bins are 33 ft. 8 in. inside diameter, 30 ft. 8 in. in height and have a wall thickness of 8 in. The slab measures 74 ft. long by 37 ft. wide by 1 ft. 7 in. thick and the supporting posts vary in size from 2 ft. by 2 ft. 6 in. to 2 ft. 6 in. by 3 ft. 6 in.



A Modern, Workmanlike Coaling Plant

An interesting feature of this coaling station, aside from its design, was the short period of time required for its creation. The excavation for the footings was started on August 30, 1921. By October 8 the columns supporting the bins had been poured and by October 31, the concrete work in the storage bins had been completed. Thus in about 50 working days after excavation had been started all footings, piers, columns, floor slab and bins involving a total of 850 cu. yd. of concrete had been reinforced and poured with due time given for aging of all parts. While the speed of the work in this instance was the most outstanding feature, excellent time was made in the construction of the terminal as a whole. No delays were encountered at any time, the contractors having their materials and their forces well in hand at all times.

The Solvay terminal was designed by and erected under the supervision of the engineering department of the New York Central, Geo. W. Kittredge, chief engineer; J. W. Pfau, engineer of construction, and R. E. Dougherty, designing engineer; and J. H. Van Buskirk, mechanical engineer. R. H. Colson, assistant engineer, was in active charge of the field work. W. M. Ballard, Syracuse, N. Y., was the general contractor for the grading, framing and masonry; the Edward Joy Company, Syracuse, for the piping, plumbing and electrical work; and the Link-Belt Company, Chicago, for the coaling plant machinery.

Lease of Panhandle by Pennsylvania Authorized Conditionally

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION has rendered a decision authorizing the acquisition by the Pennsylvania Railroad Company of control of the railroad and leased lines of the Pittsburgh, Cincinnati, Chicago & St. Louis by lease for 999 years from January 1, 1921, subject to the condition that the Pennsylvania and the Pennsylvania Company shall not dispose of their stock in the Panhandle without the consent of the commission. Commissioners Potter, Lewis and Cox signed a concurring opinion vigorously opposing the imposition of this condition as not workable; Commissioners Hall, Daniels and Campbell dissented because of it, and Commissioners Eastman and Aitchison dissented on the ground that the lease is not in the public interest.

The Pennsylvania on June 2, 1921, filed an application, pursuant to paragraph (2) of section 5 of the interstate commerce act, for an order authorizing the lease. Hearings were held on September 27 and December 13, 1921. No representations were made by any state authority either in favor of or against the granting of the application.

At the first hearing the Continental Insurance Company filed an intervening petition asking that the application be denied on the ground that the proposed lease is unfair to the independent stockholders of the Panhandle. At the second hearing it was contended in behalf of L. Kemp Duval, an intervening minority stockholder owning 1,225 shares of the Panhandle, that not only should the past earnings for a period of not less than 10 years be considered, but that in determining what those earnings were, the commission should make an investigation and ascertain what the true earnings were.

4 Per Cent to December 31, 1925, 5 Per Cent Thereafter

By the terms of the proposed lease, the Panhandle demises to the Pennsylvania all the railroads owned and operated by it, and assigns to the Pennsylvania the leases which it holds of the Little Miami, the Terre Haute & Peoria, and that portion of the Evansville & Terre Haute extending from Terre Haute, Ind., to Rockville, Ind. The Pennsylvania proposes to pay to the Panhandle, as rental: (a) a sum equivalent to four per cent on the Panhandle's outstanding capital stock until December 31, 1925, and five per cent thereafter, without deduction for any taxes other than an income tax on the stockholder levied by the government of the United States; also a sum equivalent to such percentage on any additional capital stock that may be issued in the future. (b) A further sum sufficient to enable the Panhandle to maintain its corporate organization and to pay all taxes and assessments and all installments of interest and sinking funds on its bonded and other indebtedness, when due and payable, and all taxes in respect of such bonded or other indebtedness.

The Pennsylvania further agrees to pay all rentals accruing under the leases of the Little Miami and the Terre Haute & Peoria, and all sums to become due under any contracts for trackage or other rights conferred upon or possessed by the Panhandle. The lease further provides that the Pennsylvania may and will make all such improvements, betterments and additions to the demised premises as shall in its judgment be necessary, and that the cost thereof shall be repaid to it by the Panhandle, either in money, or by the issue and delivery to it of bonds of the Panhandle, or of its capital stock, as the Pennsylvania shall elect. Upon the maturity of any of its bonds, during the term of the lease, the Panhandle, if unable to pay them, agrees to provide for their extension, or to issue and deliver to the Pennsylvania other bonds to provide for such payment.

Owns 98.3 Per Cent of Panhandle Stock

On March 15, 1920, the Pennsylvania Company, whose entire capital stock is held by the Pennsylvania, owned 651,245 shares of the capital stock of the Panhandle and the Pennsylvania owned 4,500 shares. These holdings aggregated 77.54 per cent of the entire capital stock. The remainder of the stock, amounting to 189,908 shares, was held by outside stockholders.

For many years the Pennsylvania Company and the Pennsylvania have been the financial backers of the Panhandle and its predecessor companies. Either one or the other of these two companies has guaranteed all the outstanding bonds of the Panhandle and has advanced funds from time to time to enable it to enlarge and improve its property, to provide equipment and to sustain its credit. On March 15, 1920, the Panhandle was indebted to the Pennsylvania Company for advances to an amount approximating $22,000,000, and thereafter issued and delivered to the Pennsylvania Company $20,000,000 of its five per cent, 50-year bonds, to discharge this indebtedness. Thereupon the Pennsylvania Company offered to purchase the outstanding minority stock of the Panhandle by paying to the holders thereof, par for par, 50-year five per cent bonds of the Panhandle, guaranteed, principal and interest, by the Pennsylvania. This offer was accepted by the holders of 174,791 shares. There remain outstanding 15,117 shares of minority stock, comprising 1.7 per cent of the total issue, of which the Continental Insurance Company owns 2,000 shares. The shares held by the Continental company were the only shares that voted against the approval of the proposed lease.

The Commission's Report

The commission says in its report:

"For many years the Panhandle and the Pennsylvania have worked in close co-operation and have interchanged and moved traffic as one transportation system. It is stated by the applicant that the proposed lease will enable it to operate the railroad of the Panhandle as a part of its system, which will eliminate much of the separate accounting now necessary. It is expected that economies in operation will be effected through a better alignment of operating divisions and the reduction of overhead expenses.

It should also simplify the work of preparing reports required by federal and state regulatory bodies.

"The interveners do not contend that the proposed lease would not be advantageous to the railroad companies involved nor that it would not effect economies beneficial to the public. They do contend, however, that the net income of the Panhandle for the years 1908 to 1917, inclusive, before deducting payments required to be made to sinking funds, averaged 6.75 per cent on its outstanding capital stock. They contend further that the principal factor in determining the value of the capital stock of a railroad company is the prospect of future earnings of the company, and that the circumstance that the stock of the Panhandle is virtually guaranteed by the Pennsylvania should not be given any appreciable weight in determining its value. For obvious reasons, the earnings for the period 1908 to 1917 cannot be taken as an index of future earnings. A vice-president of the Pennsylvania testified that in his opinion there was no hope that the Panhandle would earn a return equal to 4 per cent on its capital stock during the next five years, even with all economies that might be effected. As to the value of the guaranty, it is common knowledge that in many cases a guaranteed stock may sell on an interest basis comparable to that of bonds. Furthermore, in comparing the value of a rental with a return through dividends, it must be taken into consideration that dividends are not ordinarily measured by net income but are usually and properly much less.

"We do not consider it necessary to discuss our responsibility in protecting the interests of minority stockholders who may object to proposed action on the part of a carrier corporation, inasmuch as it is our view that the granting of the authority herein requested will not be inimical to the interests of any of the interested stockholders.

"As heretofore stated, approximately 98 per cent of the Panhandle stock is owned by the Pennsylvania or by the Pennsylvania Company. It is obvious that so long as that situation continues, the payment of the rentals reserved in the lease will be merely a matter of bookkeeping as regards the 98 per cent of the stock which is so owned. If the Pennsylvania were to dispose of the stock which it and the Pennsylvania Company now hold, an entirely different situation would be presented and one which might very well be said to be against the public interest. Such a sale of stock would separate the responsibility in operating the property under the lease from the proprietorship in the property which is now vested in the lessee. The Pennsylvania contends that we have no power to guard against such an occurrence by means of a condition attached to our authorization which would prevent the Pennsylvania from disposing of the stock without our consent, its position being that the conditions referred to in paragraph (2) of section 5 of the act are the conditions of the lease itself, and that the language does not cover a condition subsequent which is unrelated to the subject matter of the transaction.

The Condition

"We are unable to accept this construction of the law. In considering the propriety of proposed action for which our authority is sought, it is plainly our duty to take into consideration all surrounding circumstances that have a bearing upon the interest of the public in the thing sought to be done. It follows, in our opinion, that where the authorization depends for its justification upon certain existing circumstances, the authority given may be conditioned upon a continuance of the controlling circumstances, and proper provisions may be made to insure such continuance, or the substitution of circumstances as satisfactory from the standpoint of the public interest. In this case, we regard the relationship between lessor and lessee as essential to our approval of the proposed arrangement, and such approval will be given upon condition that the Pennsylvania Company and the Pennsylvania Railroad Company shall not dispose of their stock in the Panhandle without our consent. Subject to the aforesaid condition, we find that the acquisition by the Pennsylvania of control of the railroad and leased lines of the Panhandle under the terms of the lease described in the application will be in the public interest."

Commissioner Potter Dissents

Commissioner Potter in his concurring opinion, said:

"Our proper function is limited to an approval or disapproval, in whole or in part, of the proposed acquisition. We possess no power to require the establishment of a relation between the acquiring carrier and this commission, by virtue of which we may say what the carrier may or may not do in the future. We may not exact tribute from a carrier as an inducement to us to grant approval. We may not, as a condition, require that a carrier part with any of its property or surrender any of its existing rights. We could not properly demand that the applicant surrender to us its Panhandle stock. Nor should we demand control of that stock by tying it up so that it cannot be used without our consent. And yet this is exactly what the report attempts to do when it says the Pennsylvania may acquire the Panhandle by lease only upon the condition that it surrender control of an important asset which it now owns, and give to us the power of saying how it shall be used during 999 years.

"There is much that can happen within 999 years. This commission may not be in existence that long. Notwithstanding our order, the Pennsylvania might in the future go ahead and sell the stock without coming to us. It may be sold under a decree of court at the instance of a creditor. The condition would not prevent these and many other events. Certainly it could not be said that we are empowered to destroy the value of the Panhandle stock as property, although such is really the logic of the condition imposed. The stock in question is property, and will continue to be property, and the title and power of sale remains with the Pennsylvania. Would its sale constitute a breach of a contract made with us, and, if so, would the remedy be to recover damages and how and to what extent would we have been damaged? We have no authority to build up such a right for the government. Would the lease automatically terminate and the property revert to the Panhandle? Clearly not. Would a breach of the condition which we have exacted give the Panhandle the right to re-enter and take its property? If we thought we secured that right to the Panhandle and it did not want to exercise the right, there apparently would be nothing that we could do. But the Panhandle could not have any such right. It would have agreed otherwise. The condition simply is not workable.

"The condition is inherently unwise and unreasonable. If effective, it is a destruction and waste of which we ought not to be guilty. Our job is to develop financial strength—not dissipate it. We should conserve assets for credit and other purposes and not render them unavailable. A lease without condition would vastly improve and strengthen the position of both carrier properties and serve the public interest. The condition, if valid, will injure the carrier and the public. In imposing such a condition we transgress our duty rather than perform it. We prejudice where we should benefit. The Pennsylvania now has a practical control through stock ownership of the Panhandle. The continuance of that control we find to be desirable and obviously it is. The Pennsylvania could part with the Panhandle stock and could hypothecate and otherwise use it. It is available to serve the public interest for credit purposes, but with the present relations between the companies such use might disrupt the system. Allow the lease to be made without condition and the stock could be used no more freely than now, but if through any adversity the stock should get out of Pennsylvania control the system would not be disrupted as would result from a sale of the stock without a lease. The public interest clearly requires that the lease should be made and that the stock should remain available for use as now. It cannot be in the public interest to render unavailable an available $50,000,000 asset.

"We say it is a good thing to put the properties together. We don't even say that the stock ought not to be sold. We recognize that perhaps it should be sold—but only with our consent. We say the Pennsylvania may acquire the Panhandle by lease *if* it will turn over to us the right to say whether an asset consisting of shares of stock shall be continued in its present form for 999 years or be converted into something else. To my mind this is an invasion in management in the field of company policy which has not been authorized and which properly was withheld from a government agency.

"Section 2 of paragraph (5) authorizes us to ascertain whether the terms and conditions of the lease or other instrument of acquisition are just and reasonable. Such an instrument necessarily must have terms and conditions. The terms and conditions contained in such an instrument presented by the application, and only those so contained, are the ones we are authorized to consider. The purpose is to give us power to determine whether the terms and conditions are unduly burdensome. There is no warrant in the statute for imposing any outside or new conditions establishing a right in us or a relation between the applicant and us as an inducement to us to act.

"The explanation of my vote in favor of the report containing the offensive condition is this. Perhaps the applicant will desire to proceed under the report. The application has been before us for a long time. Bad as I think is the report, it seems to be the only way by which the applicant can obtain what I conceive to be even partial justice. Perhaps the applicant will conclude that the condition is illegal, as I am strongly inclined to think it is, and that it may be disregarded, as seems to me it may. Whatever we may think of our power, we are not above the law. The courts may intervene in a helpful way. And then, too, it may be that some time within 999 years this commission will be composed of men whose views do not accord with ours. Perhaps other men at another time will correct our error. I even indulge the hope that with further consideration we may change our mind. The report is no worse than a denial and it may be helpful to have our views understood. So I vote for the report in its present form rather than for a denial. Commissioners Lewis and Cox concur in these views."

Strike Situation Shows General Improvement

Roads Refuse to Restore Strikers "Rights"—Interruption to Traffic on Few Roads

NEGOTIATIONS BY the Labor Board for ending the strike came to an end this week when it was learned that representatives of the managements were steadfast in their resolve not to restore seniority and other "rights" to the men out on strike in precedence over men now employed, should the strikers decide to return to their jobs. Announcement to this effect was made by Chairman Hooper on July 20. A. O. Wharton, a labor member of the Board, at the same time characterized the attitude of the carriers in this regard as "unusual" and said that this action "will place full responsibility" for the "continuation of the strike with the inevitable consequences" upon the carriers. The position of the executives was outlined in a statement issued by the western presidents' committee on public relations on July 20.

Acts of violence and intimidation continued throughout the week, although such instances were, on the whole, less serious than those which occurred last week. A number of railroads secured injunctions restraining strikers from interfering with new employees or the operation of trains. The walkout of clerks and stationary firemen and oilers on some roads caused some trouble, but on the whole the situation of the railroads all over the country shows steady improvement. On some roads, especially in the Southwest, a number of passenger trains have been cancelled and in a few instances the movement of freight has been slowed up somewhat.

The roads with a few exceptions are continuing to employ new men and in most cases applicants are so numerous that little difficulty is being experienced in selecting skilled men. In the East present forces are reported as being from 50 to 60 per cent of normal and with overtime work seems to insure a continued improvement in operation in the few cases where it has been impaired.

Strike Developments at Chicago

VIEWED FROM CHICAGO, headquarters of the Railroad Labor Board, the strike developments during the past week have included continuance of violence at many points, the clarifying of the real issues involved, and indications of a possible spread of the movement.

The "secret" meetings between Ben W. Hooper, chairman of the Labor Board, and B. M. Jewell, head of the federated shop crafts, were briefly outlined in last week's *Railway Age*. These meetings developed the shopmen's attitude toward a settlement, namely, that the present walkout may be ended (1) if an agreement to stop the practice of contracting is made by the carriers; (2) if an arrangement for modifying certain working rules which reduce the overtime pay of the shopmen is made; (3) if assurances are granted to Mr. Jewell that his organization will be given a hearing by the Labor Board on the wage issue; (4) if the establishment of *national* boards of adjustment is agreed to by the carriers; and (5) if the strikers are taken back without loss of their seniority and other "rights."

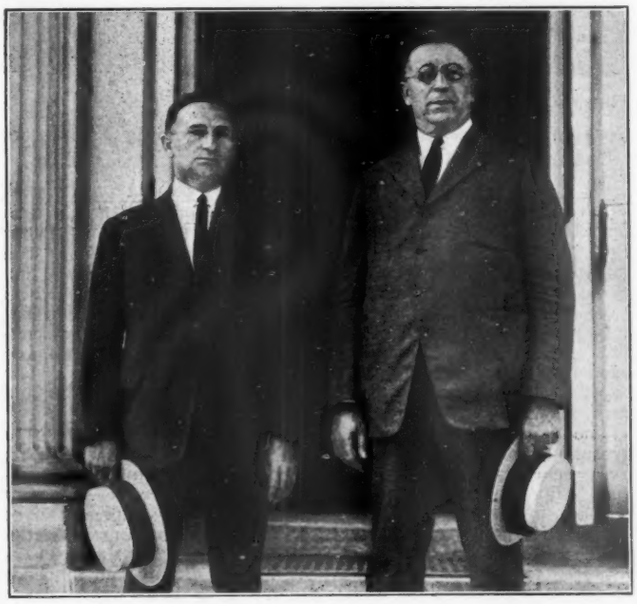


Photo by International

E. F. Grable (Right), Leaving White House After Conference With President

This program was presented to a committee of railway executives composed of B. F. Bush, president of the Missouri Pacific, representing the southwestern roads; W. R. Cole, president of the Nashville, Chattanooga & St. Louis, representing the southeastern roads; L. F. Loree, president of the Delaware & Hudson, representing the eastern roads, and Samuel M. Felton, president of the Chicago Great Western, representing the western carriers. The results of this conference are indicated in the following parts of a letter which was subsequently sent to Chairman Hooper by the executives present at the meeting:

> This strike is a refusal to accept the results of the arbitration of the Labor Board pursuant to law, after exhaustive hearings in which all parties concerned were fully heard. After careful consideration of your inquiry the conclusion seems necessarily to follow because of the strike called in defiance of the decision and order of the Labor Board and the controlling provisions of the Transportation Act, the issue thus raised is not one for consideration between the carriers and the representatives of the organized crafts on strike except through the further orderly processes before the Labor Board as contemplated by the Transportation Act. This statement is confirmed by statements which have appeared in the public press to the effect that these representatives are only willing to abandon this strike and return to service on the condition that they be relieved from acceptance of the mature decision of the Labor Board in the case referred to.
>
> No conference for that purpose is in our judgment permissible or tolerable because it would place the carriers participating therein in apparent cooperation with those on strike in seeking to find means to subvert the decision of the Labor Board. On the other hand, a prompt recall of the strike order would permit the resumption of former methods of conference and permit the consideration of any matters which representatives of the employees might desire to submit.

The letter also assured the board that the carriers will respond to the Board's call for further hearings on the issues involved should that course be taken.

The meeting on the same day between the heads of the five train service brotherhoods and the committee of railway executives named above, announced in last week's *Railway*

Age, resulted in the agreement by those present that the carriers would refrain from requesting the members of these organizations to perform work which would otherwise be done by the men on strike.

On July 13 the heads of the striking shop crafts unions carried their controversy to President Harding in a telegram in answer to the President's strike proclamation. In this telegram they charged the railroads with many violations of the Transportation Act, charged the Labor Board with having fixed lower than "living wages," and added:

> We respectfully insist that no interruption of commerce or interference of mails was caused by direct or unlawful acts of the organized employees. Such interruption and interference result inevitably from attempts of railroads to operate with insufficient, incompetent and unskilled workmen.
>
> Such interruptions and interference will continue and increase until agreement is obtained upon just and reasonable wages between the representatives of the skilled employees and railroad executives, who up to date have refused even to meet with employees' representatives.

Unrest Prevails Among Other Employees

Reports from Cincinnati told of a serious split in the ranks of the maintenance of way men, many of the general chairmen of that organization being in favor of joining the walkout and disregarding the refusal of E. F. Grable, president of the organization, to call a strike. In a statement T. C. Carroll, president of the general chairmen's association of the brotherhood, said that he had received from a majority of the general chairmen requests that he call them together in a meeting at which plans might be made for calling out the maintenance men.

Mr. Grable, who immediately announced his intention of going to Washington to enlist the aid of the President in holding his men in line, attributed a great deal of the unrest among them to requests made upon them to perform work formerly done by members of the striking organizations. He said, however, that only 24 out of the 197 general chairmen of the union were in favor of a strike.

It became known on July 14 that other workers, particularly the stationary firemen and oilers and clerks, had either been authorized to join the shopmen or were seriously contemplating such action. Timothy Healey, president of the International Brotherhood of Stationary Firemen and Oilers, authorized a strike of the members of that organization effective on July 17 in response to an "88.6 per cent strike vote of the membership." Defections in the ranks of the clerks' organization similar to those being reported among the maintenance of way men were indicated on July 14 in the reports of sporadic strikes of clerks on various railroads and threatened walkouts at many other points. E. H. Fitzgerald, president of the clerks' organization, predicted that some of his men would quit work despite his orders to the contrary. The prediction has been partly fulfilled.

Chairman Hooper continued his "personal" efforts to bring about a settlement of the shop crafts strike but on July 15, after a series of conferences, issued a statement outlining the "fundamental differences." He said:

> Mr. Jewell and his associates suggested four things for consideration. Set out in the order of their importance, namely, the contract question, the protested rules embraced in board decisions, the recent wage decision and the establishment of a national adjustment board. Incidentally they demanded that after a satisfactory adjustment of the four matters named, all men out on strike would be reinstated in their former positions without impairment of their rights of seniority.
>
> The carriers suggested that they would undertake to meet the first request of the employees by wiping out the contract system on the two or three roads where it still exists. They expressed the belief that this could be done and the board's decision against this practice made effective on all roads.
>
> The railway executives further agreed to establish regional boards of adjustment similar to those already in operation for the train and engine service men.
>
> The executives would not agree that the strikers, when they returned to the service, should take the positions and the seniority of the new men and the men who had remained in service.

As to the rule decision and the wage decision of the Labor Board, the carriers took the position that the shop crafts were at liberty to petition the board for a rehearing of these decisions, in which hearing the carriers would participate and by the result of which they would abide.

Mr. Jewell and his associates insisted that the carriers must agree to satisfactory modification of both the wage and the rule decisions of the board before the strike is called off. The executives declined to consider these two decisions, except in connection with a rehearing by the board.

Roads State Their Position

The position of the railroads was further clarified the following day when the western presidents issued a statement outlining the strike situation and answering several of the contentions being widely circulated by Mr. Jewell through the medium of statements to the press. The statement of the executives said in part:

> The situation is somewhat better in eastern territory than elsewhere, but western railways report increasing numbers of men returning to work, and most of them report the movement of trains normal. Developments show that the main thing needed to insure the return of normal conditions is protection of men who want to work from violence by strict enforcement of the laws.

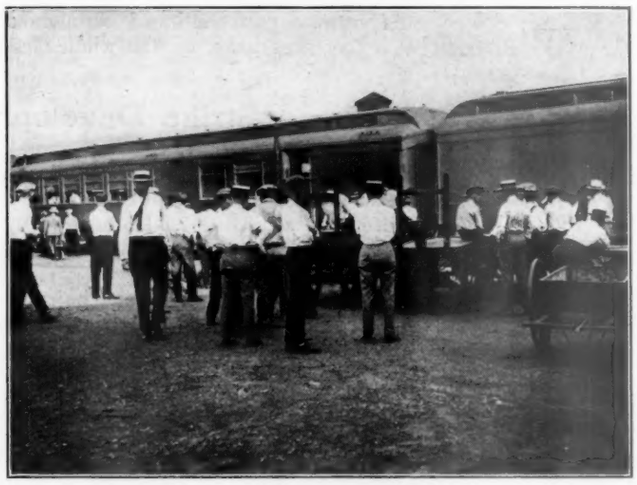


Photo by International

Strikers at Slater, Mo., Looking Over Incoming Passengers for New Employees

Several railway executives have, at his request, met and conferred informally with Chairman Hooper of the Railroad Labor Board regarding possible means of terminating the strike. The railway executives have unanimously indicated that they will not agree to any plan which is inconsistent with the decisions which have been rendered by the Labor Board, and that they will not confer with representatives of the strikers while the strike continues, but that they are perfectly willing to attend any meeting, or participate in any hearing called by the Labor Board with a view to effecting a settlement that would not nullify but uphold and carry out the board's decisions.

The railway executives also have indicated a willingness to accept any modification of its decisions which the Labor Board, after hearings, might make. They cannot agree to any conference with the representatives of the strikers because the very purpose for which such conference is sought by representatives of the strikers, as avowed by B. M. Jewell, is to secure a settlement contrary to the decisions of the board, and for the railways to agree to this would be to undermine the dignity and influence of the board, just as the unions are trying to do by this strike.

The facts show clearly that the executives of the railways have shown willingness to do everything that is reasonable to end the strike, while Mr. Jewell has indicated that only by the railways surrendering to his demands and disregarding the decisions of the Labor Board can it be ended. This leaves responsibility for continuance of the strike solely upon the leaders of the strikers.

Hooper Abandons Peace Plans

The proposed plans for the settlement of the strike were outlined and the futility of reconciling the men and the

railroads on certain points were stressed by Chairman Hooper in a statement issued on July 20 intended apparently to end the many rumors of new "peace" plans sponsored by members of the Board.

"As there does not seem to be any probability of reconciling the antipodal views of the carriers and the men on the question at issue (seniority) the Labor Board or none of its members are now engaged in further efforts along that line," Chairman Hooper said. After outlining again the peace proposals of Mr. Jewell which have been described in previous issues of the *Railway Age* but to which has been

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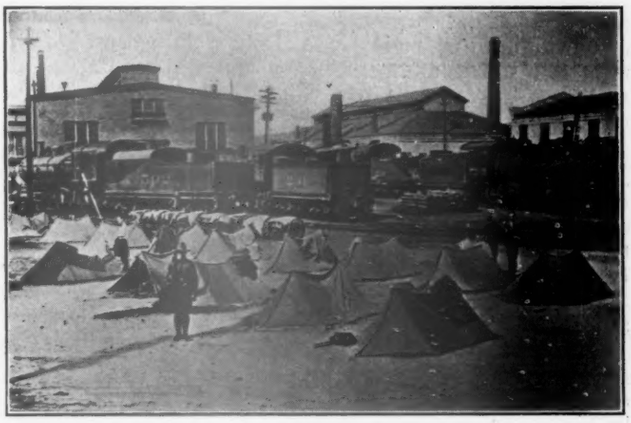
Meanwhile the Public Should Keep Cool

added the provision that all strikers must be restored to service with their seniority and other rights unimpaired, the statement says: "My investigation of the attitude of the carriers has convinced me that no serious obstable is to be found in any of the items enumerated except the fifth (seniority). As to the contracting of railroad shops only 16 out of the 201 Class I roads had entered into or proposed to enter into such contracts. Nearly all of them have desisted from this objectionable practice and a majority of the carriers would be pleased to see the few remaining roads withdraw from it. As to the reopening of the wage decision and the disputes in regard to the seven protested rules, the carriers have no objection to this course. The foregoing disposition of wages, contracting and rules would remove from conflict all three of the questions on which strike votes were taken. The proposal to establish an adjustment board was not embraced in any strike ballot but has been a mooted question a long time. Many of the carriers are willing to have regional adjustment boards, some are willing to have a national board and some would favor such a board on individual roads. An agreement of some sort could doubtless be reached on this matter. But at present there is no possibility of an agreement on the question of the reinstatement of the striking employees with all rights restored."

Chairman Hooper then outlined the carriers' position on this question as stated in the announcement by the Western presidents and the employees' position as described by A. O. Wharton, labor member of the Board. Mr. Wharton's analysis of the employees' views is as follows: "Any settlement of the present controversy which has for its object the restoration of harmonious relations and efficient operation of the shops must take into consideration, first, the restoration of the men involved to their status as employees as of date prior to the stoppage of work; second, that the great majority of these men are permanently located and are more desirable employees than those who have been employed since the stoppage of work began; third, that it will be an unusual position and one which it is not believed to be justifiable if the carriers in this case adopt an attitude denying the requests of the organizations in this respect when by so doing they prevent the possibility of a settlement; fourth, no organization has heretofore been called upon or expected to sacrifice all the accumulated rights of years of service in situations of a similar character; fifth, that this action on the part of the carriers will place full responsibility of a continuation of the strike with the inevitable consequences therefrom on the carriers."

The Carriers' Position on Seniority

On July 20, the western presidents' committee on public relations issued a statement outlining the carriers' position on the seniority of the strikers in the event of a settlement of the present controversy. This statement said in part: "Not only justice but the public interest demands that in any settlement of the strike the seniority rights of men who are now working shall be recognized. If those who have struck against the decisions of the Labor Board and tried to interrupt transportation are favored in any settlement that may be made, the incentive of men to stay at work in



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C. & A. Shops at Bloomington Under Guard

case of future strikes will be destroyed and difficulty of maintaining transportation service increased."

After calling attention to the ruling of the Labor Board on the right of the men who remained in the service and those who are employed to take the place of the strikers and President Harding's statement on the same subject, the western executives said "that it will be seen that the men who are now working have claims upon the railways and the public superior to those of the strikers is a fact that has been repeatedly recognized by Government bodies and officials and that they have remained at work or gone to work with the distinct understanding that their rights will be protected."

Developments at Washington

WASHINGTON, D. C.

THE PRESIDENT and his advisors have been devoting more of their attention to efforts to settle the coal strike than they have to the railroad situation, although both of them have been under constant consideration by the cabinet at its meetings and the administration has kept in close touch with the situation through its reports. Apparently it has been considered that if a basis for settlement of the coal strike could be reached it would be less difficult to settle the railroad strike because in that case a government tribunal is in existence to deal with the situation, and optimistic expressions have been made as to the probability of an early adjustment of the railroad controversy. For several days it has been stated to newspaper men that the question of restoring seniority rights to the strikers if the strike should be called off on a promise of a new hearing by the Labor Board has been the principal stumbling block to a settlement.

Following the failure of negotiations with the mine operators and the union the next step of the President was the sending of the message to the governors of the coal-producing states, the purpose being to give the coal operators an opportunity to demonstrate whether they can open their mines, as many of them have said they could, if the government would refrain from interfering and would furnish protection for those willing to work. Calling upon the state authorities was also regarded as a necessary preliminary before making use of the federal troops.

Action of State Authorities Awaited

Secretary of War Weeks on July 13 made public a telegram he had sent in reply to a request for federal troops from C. E. Schaff, receiver of the Missouri, Kansas & Texas, advising him to make demand on the governor of Texas for the protection of lives and property, including requisite protection from lawlessness and violence to permit the operation of trains. The state is charged with responsibility in such matters, he said, "but in case the state authorities are unable or unwilling to maintain law and order the federal government is ready to afford protection and will take action, if necessary," as soon as Mr. Schaff had a reply from the governor.

Secretary Weeks also sent a message to Major General John L. Hines, commanding the Eighth Corps Area at San Antonio, stating that if protection is not furnished by state authorities the federal government will take action and directing him to prepare a sufficient force for that purpose. He added that the receiver is acting under appointment by a United States court. The telegram from Mr. Schaff was as follows:

"Referring to President's proclamation assuring movement interstate commerce and protection of men employed therein the Missouri, Kansas & Texas Lines are being operated by me as receiver under appointment by United States Court. The largest and most important terminals on these lines are at Parsons, Kansas, and Denison, Texas. At Parsons we now have for protection state troops and are having no difficulty in operations. At Denison we have not been able to get protection and a serious situation has arisen. K. O. & G. roundhouse foreman was shot and killed last night while at work; thirty guards brought into Denison on our passenger train number four about midnight last night were taken in charge by mob of strikers while being escorted to shops by deputy United States marshal and sent out of town; a number of our guards have been taken off and beaten up. Sixty-four cars of livestock and meat in interstate commerce are being detained on account of interference by strikers. United States marshals so far have been unable to cope with situation. We have just now reported situation by telephone to Commanding General of Eighth Corps Area at San Antonio. We have also reported it to governor of Texas. I respectfully request aid and urge that you send to Denison today a detachment of United States troops to prevent riot and bloodshed or loss of lives and property and to assure movement of interstate commerce on Missouri, Kansas & Texas lines which have heretofore been designated by War Department as Class A military lines to be maintained and operated in event of major emergency. Please telegraph your decision and greatly oblige."

Messages received since then from Col. Lincoln, the inspector general, indicate an absence of disorder at Denison because little effort is being made to operate trains from that point. He also reported that the governor of Texas wanted more time before deciding whether to send state troops to that point and also that he had taken the position that local authorities should act first. The Secretary of War said on Monday that he had received no additional requests for troops but the Attorney General has received many requests for additional deputy marshals and many of these have been complied with.

Secretary Weeks said on Friday that he had not as yet acted to send federal troops to Denison, Tex., because the governor of Texas, by sending the state adjutant general to make an investigation, was apparently acting in good faith and so he had also ordered an inspector general to that point so as to be prepared to act if necessary in case the state authorities failed to do so. He said most of the representations made to him in telegrams from railroad officers involved cases of individual sabotage rather than mob action and that they were therefore rather difficult to deal with by the use of troops.

Following the cabinet meeting on Friday the administration apparently held a most optimistic view of the situation and it was stated that a settlement might be reached before morning.

The cabinet meetings on Friday and Tuesday were devoted entirely to the railroad and coal strike situations. The Secretary of War and the Attorney General reported on the numerous telegrams that they had received from various railroad officers asking for or suggesting the possible need of protection from federal marshals or troops and Secretary Hoover had complete reports as to the situation on each road. There was also a report from Chairman Hooper of the Labor Board on his negotiations looking toward a settlement of the strike.

President's Power

President Harding believes that the executive has full power to take over and operate the coal mines or the railroads and to draft men into the service to keep them in operation in the event of any well established emergency, it was stated officially at the White House, in reply to questions from correspondents, but it was also stated that the railroad situation was not likely to take that tack. The President believes that in case of a sufficient emergency involving the welfare of the public the executive has almost limitless power, because the only way of proceeding against him would be impeachment and he would be willing to run the risk of impeachment if he considered it necessary to serve the people. He also believes that it would hardly be held to constitute an abrogation of any one's liberties to draft a citizen into the public service in an emergency.

Grable Calls on President

E. F. Grable, president, and Fred L. Feick, legislative representative, of the United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers, spent two hours on Saturday in conference with the President and urged him to call a conference between Mr. Jewell and the railroad executives in order to prevent a continuance and spread of the strike. According to a statement from the White House "they brought to the President the first personal and official protest that the railway managers were ignoring the decisions of the Railroad Labor Board, and presented their objections to the decision of the board relating to the appeals of that brotherhood." It was also stated that "the President

gave the fullest possible hearing and assured Messrs. Grable and Feick that they had taken the one defensible course in presenting their case. He assured them that inasmuch as Congress has constituted the Railroad Labor Board for the express purpose of settling disputes and preventing interruptions to transportation, all decisions must be accepted by employers and employees alike, and assured them also that non-compliance on the part of railways had not been brought to his attention until the strike was called. He explained that any inadequacy in the law must be corrected by Congress and cannot be affected by interrupting railway operations. Messrs. Grable and Feick expressed a hope for an early settlement and declared that the proper conferences would end in such a settlement. The President assured them that every possible conference was being sought."

After his visit to the White House Mr. Grable announced that he had issued a call for a meeting at Detroit on Wednesday of the grand officers of the brotherhood to decide on its policy.

Amendment of Transportation Act Proposed

Hearings for the purpose of considering amendments to strengthen the labor provisions of the Transportation Act will be held soon before the Senate committee on interstate commerce, Senator Cummins announced on July 15 after a conference with the President on the strike situation. While he said there was no expectation of legislation in time to affect the present strike he was convinced that the law ought to be changed to make the decisions of the Labor Board mandatory and enforceable by the provision of penalties for their violation and also to guarantee a "living wage" to the railroad employees as a minimum, including a definition of a living wage. Senator Cummins, at the time the transportation act was being written was in favor of imposing penalties for failure to comply with decisions of the Labor Board and for conspiracies to interfere with interstate commerce by strikes.

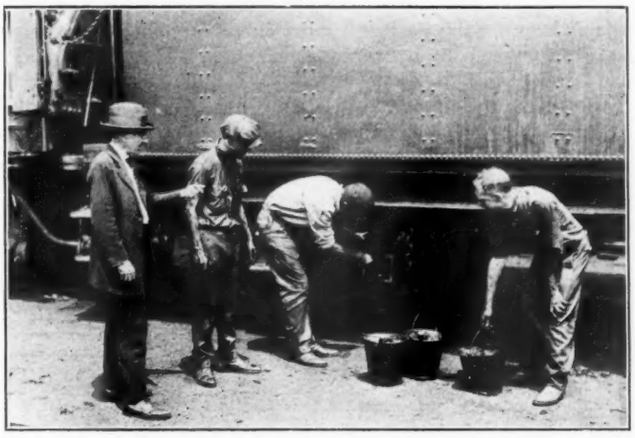


Photo by International

Instructing New Employees in the Care of Journal Boxes, Erie Yards, Jersey City

Senator Cummins has also announced his intention of introducing a bill providing for a tribunal similar to the Railroad Labor Board to deal with coal labor controversies.

Gompers Advises the Press

Washington newspaper correspondents on Friday were given their choice between two very different sources of news and guidance on the railroad situation. The information and publicity service of the American Federation of Labor sent out a notice that President Gompers "has thought that reporters and correspondents might care to come together with him for a discussion of the present railroad situation in which views might be exchanged and questions asked freely" and that he would be glad to see them at his office at three o'clock, hoping "that such a conference may be of value both for its general interest and for its news value." The time corresponded exactly with one of the regular twice a week conferences of the newspaper men with President Harding, who was also expected to have something of interest to say on the railroad situation. The press associations and the larger papers that have large staffs in Washington were able to cover both conferences but more papers have only one man here and it was observed that the number at the White House was about the same as usual. However, the President had very little to say on this occasion, being in expectation of more definite news from Chicago, and many of the correspondents were able to arrive at Mr. Gompers' office a little late but still in time to hear some of his fulminations. The extent to which they exchanged views with him was not reported but he apparently succeeded in convincing some of them that the government was trying to "enforce" the decisions of the Labor Board by "coercing" the employees but not its decisions against railroads that have failed to comply with orders of the board, rather than trying to protect those who are willing to work under the board's decision from interference by those who do not wish to. Mr. Gompers also took the position that the Labor Board is a "fifth wheel," that attempts to regulate wages are all wrong, and that the three public representatives on the board are simply representatives of the railroad interests, although two of them were those who two years ago voted for the wage increase of over $600,000,000. He said that the best medium for a settlement would be direct negotiations between labor and the railroad managements without interference from the board, and he has issued numerous statements to the press along these lines.

Motor Trucks and Airplanes for Mail Transport

Plans for mobilizing motor trucks and airplanes for the transportation of mails if the strike conditions make it necessary have been worked out by the postoffice authorities and motor trucks were put into service on July 15 to carry the mails between Bedford and Switz City, Ind., after the mail trains had been annulled. The Secretary of War has furnished the postoffice department with an estimate that 131 planes and 172 air pilots are available at 13 widely distributed fields while the Navy Department said it could furnish 163 planes and 240 pilots. Postmasters were also directed to make a canvass of all government agencies in the immediate vicinity of their offices for the purpose of ascertaining what government-owned trucks other than those belonging to the postal service will be available for mail transportation. Should a contingency arise necessitating the use of motor trucks in lieu of mail transportation service they were to advise the department promptly by wire or letter, depending upon the nature of the emergency, stating the motor trucks available and the branch of the government having jurisdiction over them.

However, it was stated at the White House on Tuesday that there had been very little real disturbance of the mails and the report that marines would be placed on mail trains as guards was characterized as "bunk."

Mail Train Schedules Affected

Reports received by Paul Henderson, second assistant postmaster general, from Lovilla, Iowa, on Tuesday, state that the interference of strikers who sought to prevent strike-breakers from clearing the wreckage of a Burlington passenger train which jumped the track has ceased, and the wrecking crew has been permitted to build a temporary track around the wreck, which allows the passage of trains.

Inspector-in-Charge S. H. Cisler, St. Louis, wired that

20 deputy United States marshals are on duty at Hannibal, Mo., but officials of the Missouri, Kansas & Texas and Wabash railroads state that 50 will be necessary before they can take action to open shops or restore trains. No more trains have been taken off, but the Wabash railroad reported that its stock of coal is being depleted rapidly. The St. Louis-Omaha line, which has been interrupted by washouts, was expected to resume during the day. Branches of the Burlington in northwest Missouri are getting in better shape and regular service will be resumed shortly. The M. K. & T. advised the inspector that it expects to resume service on the Hannibal-New Franklin line by Wednesday.

Superintendent of Railway Mail Service Gaines, Fort Worth, Texas, wired that passenger train service between Colmesnell and Trinity has been superseded by motor car service, with no delay to the mails. Trains 5 and 6 between Dallas and San Antonio have been annulled, but mail cars will operate on trains 7 and 8 between those cities. Trains 25 and 26 between Fort Worth and Waco have been discontinued but mail service will be transferred to trains 17 and 18. All train service between Stamford and Rotan was omitted Saturday and Sunday, but was resumed Monday. The superintendent stated that all of the services referred to are on the Missouri, Kansas & Texas and the discontinuance of trains has been due to strike troubles.

Superintendent of Railway Mail Service Harris, Atlanta, stated that the following trains were discontinued Monday to conserve power, mail cars being assigned to other trains: Trains 5 and 6 between Harriman and Nashville; 17 and 18 between Hamlet and Atlanta; trains 20, 21, 23 and 24 between Hamlet and Jacksonville; 402 between Nalaca and Burtow; 13 and 14 between Savannah and Montgomery.

Mr. Henderson on Wednesday heard from Superintendent Gaines, Fort Worth, Texas, that striking employees prevented the operation of train service on Tuesday on the Deleon-Cross Plains, Texas, line. Gaines stated that the railroad people expected to get a train out some time during the night, but the superintendent regarded that as a doubtful possibility. The superintendent further stated that if train service is not resumed by this morning, he will arrange to supply Cross Plains, Pioneer and Rising Star by truck from Cisco.

A. A. Fisher, superintendent in charge of the Washington division, stated that Norfolk & Southern trains 30 and 31 between Raleigh and Charlotte, N. C., and trains 32 and 33 between Raleigh and Fayetteville, N. C., had been withdrawn, and announced that the mail carried on those trains had been transferred to other trains.

S. H. Cisler, superintendent at St. Louis, wired that the St. Louis-San Francisco would discontinue trains No. 3 and No. 4 between St. Louis and Paris, Mo., and also annul trains 18 and 19 between Springfield and Clinton, Mo., trains 22 and 23 between Kansas City and Clinton, trains 827 and 828 between Cape Girardeau and Hayti, Mo., and trains 873 and 874 between Cape Girardeau and Poplar Bluff. Mail cars scheduled to run on these trains have been transferred to other trains.

Superintendent Formanek at Cleveland, stated that trains 2 and 7 between Grand Rapids and Chicago have been withdrawn because of coal shortage and strike conditions. Trains 101 and 108 between Pentwater and Holland, Mich., trains 1 and 4 between Saginaw and Manistee, train eight from Petoskey to Grand Rapids, trains 102, 105 and 120 between Bay City and Detroit, trains 22 and 27 between Port Huron and Saginaw, and trains 21, 22, 23 and 26 between Big Rapids and Grand Ledge, Mich., have been annulled, the mail cars being transferred to other trains.

Instructions to U. S. Marshals

The Attorney General telegraphed the following instructions on Tuesday to United States marshals:

"In making requests for the appointment of special deputies, you should base them on specific facts, the result of investigations made by you and the United States attorney. You should make your investigations independent of the railroad companies and reach your conclusions uninfluenced by their requests, except as they are competent and relevant to the situation as you find it to exist. You will readily appreciate that the Department of Justice is anxious and willing to do all within its power to preserve federal law and order in your district. You will just as readily understand that the department cannot police the railroads and prevent the infraction of state laws at different points where disturbances occur and are likely to occur.

"In making your investigations you should particularly inquire as to what steps, if any, the state and county officials have taken to uphold the law of the state in which your district is located. You should co-operate with the local authorities and request that they co-operate with you in enforcing the law. When you do reach a conclusion, based on the investigation and evidence above outlined, you should submit it to your federal judge for approval if possible, and then only make your specific request of the department for authority to appoint deputies or additional deputies to prevent either a direct or immediate indirect violation of the federal laws in your district. You should reduce this special force as the situation improves and will permit keeping the best and most experienced men until the last." Commenting upon his telegram, Mr. Daugherty said:

"Deputy United States marshals cannot run trains, but they can see to it that the mails are not interfered with and that interstate commerce is maintained. The Department of Justice cannot furnish a regiment of deputy marshals to run the railroads, but it can and will prosecute violations of the law. Deputies will do what is necessary to be done until other agencies are required. If any one doubts the power of the government, he is very much mistaken, and if any one doubts the intention of the government to preserve order, he, too, is very much mistaken."

A. F. of L. Asks Support of Strike

The executive council of the American Federation of Labor has addressed an appeal "to all workers everywhere to support the railroad workers in their efforts to secure a just settlement of the railroad shop trades dispute." The appeal has been forwarded to every labor organization in the United States, to every labor publication and to all organizers of the American Federation of Labor, as follows:

"We call upon working people everywhere and upon all Americans who love justice to sustain the cause of the railroad workers who have ceased work as their only remaining method of protest against an injustice which must rank as one of the most reprehensible which any American industrial or political institution has ever sought to impose.

"No workman, whether a member of a union or not, will, if he is possessed of true American manhood, engage in any work formerly done by men now on strike.

"No man now on strike, will, if he is true to the cause, conduct himself in any but a law-abiding manner.

"The cause for which the workers are contending is worthy of every just and proper effort that can be put forth in its behalf.

"Let there be a determination and a solidarity which shall at the same time bring victory in the present struggle and serve notice upon reactionary employers and financial interests everywhere that there is to be no return to autocratic, despotic methods in American industrial life."

President Asks Governors to Protect Mines

President Harding on Tuesday addressed to the governors of the 28 coal producing states a telegram urging them to second his invitation to the mine operators to return to

their mines and resume activities, in which he expressed in a general way the policy of the federal government toward both the coal and the railroad strikes. He stated that the invitation should be accompanied "by such assurance of maintained order and the protection of lawful endeavor as will give assurance to everybody concerned," by way of pointing out that the preservation of law and order is primarily the function of the state and local authorities. He said he wanted to convey the assurance of the prompt and full support of the federal government "whenever and wherever you find your own agencies of law and order inadequate to meet the situation," and that "your state government and the federal government are jointly responsible for maintained conditions under which free men, willing to work, may work in safety" and that "we are responsible for the production and transportation of a fuel supply ample for the necessities of the American people and the public utilities which serve them, particularly the railways engaged in interstate commerce."

"Thus far," he said, "there has been no challenge of the right of the workers to decline employment or the right of the employers to hire as they elect," and "there has been no government assumption of a part in the dispute between the organized workers and organized employers."

The Situation on Western Roads

THE THIRD week of the strike brought few developments of a serious nature. The sharp encounters of the preceding weeks gave way to "trench warfare" with both sides on the defensive. The center of violence shifted from Illinois to the southwest. The presence of state troops in Bloomington and Clinton, Ill., seemed to have a salutary effect and a certain degree of quiet was restored. In Bloomington the members of the train service brotherhoods, who had voted on July 11 to not handle trains out of the Chicago & Alton yards as long as troops were on duty there, rescinded their action the following day.

One more state, Ohio, found it necessary to mobilize troops during the past week. Disorders at Cleveland, Toledo and other points forced Governor Davis, on July 14, to order a battalion of infantry and auxiliary troops to be mobilized and held in readiness for the suppression of further disorders. It was also found necessary on July 14 to mobilize another detachment of the Missouri national guard to reinforce the troops on duty at Poplar Bluff, but by July 17 the situation at this point had so quieted that one company of guardsmen was believed sufficient to cope with the situation, and three companies were transferred to Chaffee, Missouri, where state troops had been requested by the sheriff following the announcement that the St. Louis-San Francisco will reopen its shops at that place on that date.

Governor Boyle of Nevada was asked by the Union Pacific for protection at Las Vegas, while Governor Russell of Mississippi received an appeal for troops to protect the shops of the Mississippi Central, and the St. Louis-San Francisco renewed its appeal to Governor Taylor of Tennessee to send national guardsmen to protect its shops at Memphis. The situation at Grand Rapids and Saginaw, Mich., where officials have threatened to appeal for federal troops in the event of strike violence, is said still to be critical, although no open outbreaks have occurred.

The center of violence during the past week has been in Texas where orders for the mobilization of regular army forces at San Antonio were expected as a result of the statement by Governor Neff that state troops would not be ordered out to protect Missouri, Kansas & Texas property. The governor's statement followed a telegram from Secretary of War Weeks to Maj. Gen. John L. Hines, commander of the eighth corps area, to the effect that "if protection is not furnished by state authorities, the federal government will take action and you will prepare a sufficient force for that purpose." Secretary Weeks announced on July 14 that he had ordered the inspector general of the eighth corps area to proceed to Denison, Tex., and report on conditions there, further appeals for assistance having been received from the receiver operating the line from the Dallas, Tex., Chamber of Commerce.

Strikers are believed to be responsible for the increasing number of train wrecks reported since July 16. At Nevada, Mo., it was reported that a switch on the main line of the Missouri, Kansas & Texas had been thrown three times, but that it was discovered each time by employees before an accident resulted. Postmaster General Work received notice at Washington that coal and rail strikers and sympathizers had blocked all attempts by wrecking crews to clear the Chicago, Burlington & Quincy tracks at Lovilia, Iowa, where a train had been derailed. Local authorities were said to be "lukewarm."

On July 16 an attempt was made to wreck Texas & Pacific train No. 16, running between New Orleans and El Paso. The engine was derailed but the remainder of the train did not leave the track.

On July 14, temporary injunctions restraining strikers from violence or intimidation were obtained from federal courts by the Wabash at Little Rock, Ark.; the Chicago & North Western at Winona, Minn.; the Kansas, Oklahoma & Gulf, at Guthrie, Okla.; the Union Pacific, at Reno, Nev.; the Chicago, Rock Island & Pacific, at Fort Smith, Ark., and the Baltimore & Ohio at Indianapolis, Ind.

Picketing of railroad shops by strikers was definitely forbidden in preliminary injunctions granted four railroad companies by Federal Judge FitzHenry at Springfield, Ill., on July 17. The injunctions continue in effect the temporary restraining orders granted several days previously. They are directed against strikers of the Wabash, the Illinois Central, the Chicago, Burlington & Quincy and the Chicago & Alton.

Reports from western roads indicate that operating conditions are improving. Recruiting of workers has resulted in shop craft forces ranging from 25 per cent to 60 per cent of normal. Full traffic schedules are being maintained with comparatively little difficulty. Injunctions have proven effective and have contributed to the maintenance of service.

The Cleveland, Cincinnati, Chicago & St. Louis reports a 60 per cent locomotive and a 30 per cent car department force working, and recruiting progressing favorably in spite of much intimidation. Little trouble has been experienced with men in other departments. This company has operated every passenger train on schedule and about 85 per cent of the time has accepted all freight offered, with no accumulations at any time.

The Pere Marquette has experienced much trouble through the interference of strikers, but secured an injunction on July 18, which is expected to eliminate the majority of the difficulty.

The Great Northern has a force of approximately 2,000 men at work out of a normal force of 9,000. The strike of firemen and oilers crippled this road somewhat, but normal traffic has been maintained.

The Michigan Central is operating normally with a 60 per cent force. Traffic has not suffered and recruiting of workers has been carried on rapidly. This company is contracting with outside shops for repairs wherever possible.

The Denver & Rio Grande Western has 211 shopmen working and 2,400 still on strike, more men being hired daily. No serious disturbances or interferences with traffic

have been encountered and other classes of employees have remained neutral.

The Southern Pacific System reports that of the 9,778 shopmen who walked out 764 returned by July 6, on which date the ultimatum regarding the loss of seniority rights expired. The working force has since been recruited to 6,768. The company reports that it is encountering serious interference by intimidation and that violence is being continually used to prevent recruiting. Sufficient protection has been obtained at the present time and with an injunction in force traffic is being maintained at a normal status, other employees remaining neutral.

The Missouri Pacific has increased its shop forces to within approximately 25 per cent of normal. It has suffered some congestion but with the assistance of the United States marshals, militia and local authorities the situation is well under control. The injunctions are proving effective and the attitude of other employees is satisfactory.

The St. Louis-San Francisco reports improved conditions. With a number of its former employees returning in addition to the new workers, it has a sufficient force to handle all traffic; all passenger trains are now being operated although the removal of several trains from branch lines is contemplated due to the difficulty in turning engines at small terminals and the decrease of travel due to the strike.

The Missouri, Kansas & Texas has 25 per cent of its normal force at work and is having no serious labor disturbances or interference with traffic nor has any difficulty been experienced with its other employees.

The Atchison, Topeka & Santa Fe reports that 8,358 men are working. Approximately 11,000 are on strike. No difficulty has been encountered in operation and traffic is moving satisfactorily, the attitude of other employees remaining neutral.

The Pennsylvania, Northwestern region reports that conditions are practically unchanged and that from 50 to 60 per cent of its shop positions are filled. Little or no interference or operating difficulty is noticed and all train schedules are being maintained.

The Chicago & Alton reports that it has approximately 500 men at work in place of its pre-strike force of 2,450. This company has been seriously hampered by labor influences at points on its line although traffic is moving satisfactorily and conditions are improving.

Conditions in the East

DEVELOPMENTS IN the strike situation in the East have been largely in the nature of steady and gradual improvement. Passenger and freight business is moving in normal volume with few delays chargeable directly to strike conditions. Most of the roads are building up their shop forces by the employment of new men and from observation at some of the railway recruiting offices in New York City, it seems that there is no shortage of applicants. As to the numerical strength of present forces as compared with those of pre-strike days, John P. Walber, executive secretary of the Bureau of Information of Eastern Railways, said on July 19 that in the eastern district, present forces represent from 50 per cent to 60 per cent of normal and that this figure shows an increase of about 50 per cent over July 5.

The strike of the stationary engineers, firemen and oilers which was scheduled for July 17 has apparently had little effect, inasmuch as most of these employees who were likely to respond to the strike call had already gone out, without authority from their leaders, with the rest of the shopmen.

Several of the roads have secured from federal courts injunctions against strikers forbidding them to interfere in any way with the work of new employees or the operation of trains.

The refusal of mechanical employees in outside shops to have anything to do with repairing equipment sent to these shops by the railroads on account of the strike, which was rumored, has apparently fallen through in at least one important plant. Press dispatches from Albany carry the news that the employees of the Schenectady plant of the American Locomotive Company have voted by an overwhelming majority to continue repairing locomotives belonging to railroads affected by the strike.

Pennsylvania and Shopmen Come to Agreement

The Pennsylvania, on July 18, announced that it had reached an agreement as to wages with its shop crafts employees who had not left the service. This completes a series of wage negotiations which the company has carried on with employees in a number of its departments, viz., maintenance of way, signal department, clerks, miscellaneous forces and shop crafts. The company's announcement reads in part as follows:

> The matter of adjusting rates of pay of these classes has been under negotiation for several months. It was handled entirely with committees of employees representing the various classes.
>
> The new schedules of wages differ in some respects from the rates established by the Labor Board for other railroads, but the difference is in favor of the Pennsylvania employees. For the most part the Pennsylvania System rates are graded in accordance with the skill and experience required and the prevailing rates are generally higher than those established for other railroads.
>
> The completion of these wage adjustments marks the third important achievement in industrial relations under the Pennsylvania System's plan of employee representation which was established last year in order to give the employee an opportunity to have a voice in the Pennsylvania management. The first was the negotiation of mutually satisfactory rules covering working conditions to take the place of the so-called "National Agreements," and the second was the establishment of permanent methods of settling controversial questions.
>
> All three of these matters have been determined in joint conferences between the management and employees elected by secret ballot to represent the various classes.

Conditions on Baltimore & Ohio Improve

The Baltimore & Ohio, which was affected in a comparatively serious manner at a few of its points, reports continued improvement. The situation on this road is reported in an unusually complete fashion in a statement given out by C. W. Galloway, senior vice-president, last Saturday, which follows in part:

> A number of the old men who have been working at Mt. Clare, who failed to show up for work Monday, reported for work this morning. Their fears have been allayed by the issuance of the federal injunction of Maryland, and the realization of this means protection against the intimidation, threats and fear of bodily harm on the part of strikers and their sympathizers, who have been stopping the men on the streets and threatening them. This feeling on the part of the men who are working is justified from the results in other territories where federal injunctions have been granted.
>
> Information coming to me this morning from a number of men is that they want to return to work and I believe they will do so at many points as soon as they fully realize the value of the protection obtained under the injunctions which have been granted at various points on the Baltimore & Ohio and which have tended to restore almost perfect order.
>
> The Baltimore & Ohio continues to lose its business to non-union roads, one non-union road offering to handle the Baltimore & Ohio's lake business, the movement of which has been delayed by curtailed operations resulting from the strike.
>
> We hired 829 new men yesterday on the system as a whole, 550 of whom were employed on Eastern lines and 279 on Western lines.
>
> Everything is quiet this morning. The only disturbance in the last 24 hours was at Glenwood, Pa., where at 4 o'clock yesterday afternoon an attempt was made on the part of strikers and sympathizers, among them women, to assault a motor truck driver making deliveries to shops, which resulted in a large crowd gath-

ering off the property of the Baltimore & Ohio, some stones being thrown. The crowd was dispersed by city police by the use of clubs and the party who threw the stones was also arrested. There were also three pickets arrested for attempted assault on employees, the arrests being made personally by the commissioner of police, who was on the ground. There was no property damage and no one hurt.

The effect of the firemen and oilers being called on strike so far as the Baltimore & Ohio is concerned, is negligible, as a good many of them had illegally struck in sympathy and have been replaced.

Overtime Work a Factor

L. F. Loree, president of the Delaware & Hudson, on July 19 called attention to the fact that shop employees of his road are now working twice as many hours a day as normally, a factor which must be taken into consideration in estimating the effect the strike is having on the railroads. The percentage of present forces as compared with pre-strike forces is not enough—this figure in many cases should be practically doubled to determine with any degree of accuracy the railroads' present labor strength.

The *Railway Age* this week has not attempted to publish reports of the strike situation on the various Eastern roads as has been done in previous issues. The reason for this is that there have been few changes of a sufficiently pronounced character to warrant a complete summary of present conditions. In most cases the summaries published last week need only be amended by the simple statement, "Conditions improved."

Some Violence Reported

Some instances of violence and intimidation have been reported. One of the most outstanding of these occurred at Concord, N. H., where, it is said, 15 or 20 heavily armed masked men evaded the guards at the Boston & Maine shops on the night of July 18 and routed new employees of the railroad from the dormitory where they were sleeping. Approximately 40 new men were driven out into the rain by the invaders and some of them were injured.

Strike Situation in the Southeast

The strike situation in the southeast varied considerably with the different roads. On some roads a considerable number of the men had returned to work or had been replaced by others but on some of the larger roads there was very little change. Freight service was somewhat delayed and some local passenger trains were withdrawn. On a number of roads some of the clerks have gone out while others are talking about going out and whereas the situation had been rather quiet during the preceding two weeks, disorders have broken out at several points and in many cases the local authorities instead of trying to maintain order have been acting in support of the strikers.

Western Maryland Increases Net with Less Traffic

Tonnage Falls Off 36.9 Per Cent. Transportation Ratio Reduced to 36.64. Maintenance Savings

The Western Maryland in 1921 moved 36.9 per cent less tonnage than it moved in 1920. In spite of this fact it improved its net income markedly. The corporate income account for 1921 showed a credit income balance of $421,296, which compared with $57,735 in 1920. This meant that the road had a wide margin over fixed charges; it pays no dividends. The net was not up to pre-war standards. In 1917, for instance, there was a net after fixed charges of $1,614,285; in 1916, of $1,319,060. The 1921 income account included an item of $400,400 partial payment on the guaranty. In 1920 there was credited on the guaranty $1,001,788.

Because of the fact that the corporate income account takes into consideration the matters of standard return and guaranty, it does not give an adequate idea of the road's real operating results and does not reflect the real improvement that was made during the year. The improvement is better shown by the fact that in spite of the decline in traffic the road operated during the year at a ratio of 78.59. This compared with ratios of 101 in each of the years 1920, 1919 and 1918. In 1917 the ratio was 70.10. Transportation expenses in 1921 were brought down to 36.64 per cent, a figure which but few of the country's railroads were able to better. The transportation ratio in 1920 was 44.88; in 1919, 39.77; in 1918, 46.44 and in 1917, 34.62.

Bituminous Coal About 60 Per Cent

Bituminous coal makes up about 60 per cent of the Western Maryland's tonnage. In 1920 the road moved 11,527,675 tons of this commodity which made up 62.9 per cent of its total tonnage. In 1921 the bituminous tonnage totaled only 6,524,286 tons, or 56.4 per cent of the total. The drop in the coal tonnage was sharp and decisive as should be sufficiently clear from the figures given. This detail is further emphasized if it is noted that the tonnage of the best month of 1921—January, 626,731 tons—was less than the tonnage of the poorest month of 1920, June, in which month 674,474 tons were moved. The best month in 1920 was January, in which month the bituminous totaled 1,317,270 tons. The Western Maryland is being rather severely hit by the present coal strike. Its loadings of coal in the week ending April 15 this year were only 313 cars. In March and April, 1921, its weekly loadings approximated 1,300 cars. This reduction in coal tonnage will very likely be clearly reflected in the April, 1922, net.

The total tonnage of the Western Maryland in 1921 was 11,578,111 as compared with 18,335,345 in 1920, a reduction, as noted in the first paragraph, of 36.9 per cent. The transportation revenues totaled $17,643,054 as compared with $20,205,687, or there was a decrease of $2,562,633. The reduction in coal and coke revenues as between the two years was $2,200,647.

A Program of Drastic Economy

With this reduction in revenues confronting it, the road carried out a program of drastic economy. Whereas the revenues were reduced about $2,500,000, operating expenses were reduced $6,508,263. Maintenance of way was reduced $1,237,042; maintenance of equipment, $2,543,304; transportation, $2,605,185; the latter reductions, as above noted, resulting in a transportation ratio in 1921 of 36.64.

The reduction in maintenance of way expenses was partly due to lower material and wage costs. There were also actual savings in the amount of work done. There were laid 26.05 miles of new rail as compared with 20.65 miles in 1920; rail renewals were up to the average of preceding years. At the end of the year the road had in its total of 774 miles, 568 miles laid with 90-lb. rail, as compared with 561 at the end of 1920. On the other hand, the number of ties put in in 1921 totaled 269,351, as compared with 322,056

in 1920. The ties put in track in 1921 were the smallest in number for a period of 10 years with a single exception, 1916.

The Western Maryland is mostly ballasted with cinders and slag. Of the total mileage of 774 on December 31, there were 88 miles ballasted with stone, 561 with cinders and slag, and 125 were partly ballasted. In 1921 ballast on 57 miles was renewed as compared with 103 miles in 1920. The 1921 ballast renewals were the lowest for a ten-year period with the exception of 1917 and 1916. It is interesting to observe that in 1920 the road had 206 miles ballasted with stone; in 1917, 539 miles, but in 1921, only 88 miles. The road's practice since 1917 has been to prefer cinder and slag in renewals instead of stone.

Some Detailed Figures of Equipment Maintenance

With reference to equipment maintenance, the story is told in a percentage of bad-order cars on April 15 of 13.5 not as low as it should be but about the average for the country as a whole. The Western Maryland annual report gives some detailed figures relative to the maintenance of both way and equipment. Some of the maintenance of way figures have already been quoted. The maintenance of equipment figures include such details for cars as cars repaired and new wheels applied, and such details concerning locomotives as: locomotives receiving general, heavy and light repairs shown separately; boilers receiving general repairs; new driving and truck axles; new cylinders; new engine frames; new main and side rods; new tires, etc. The figures for 1921, in nearly every case, show reductions from those of 1920 and previous years, with the single exception of one item—cars receiving light repairs. Locomotives receiving general repairs in 1921 totaled 138, or 97 less than in 1920; those receiving heavy repairs, 95, or a reduction of 23. Freight cars receiving general repairs totaled 6,208 as compared with 8,023 in 1920; cars receiving heavy repairs, 2,557 as against 3,113; light repairs, 210,589 as compared with 157,958.

These details would seem to indicate that much of the economies carried out in 1921 will, of necessity, have to be made up in more opportune times than a year in which the road suffered a reduction of 36.9 per cent in its tonnage. Of course, it will be borne in mind that the figures which have been quoted must be used with discretion. With smaller traffic the amount of repair work to equipment would necessarily be less. To take one instance, the average mileage per locomotive in 1921 was 18,250 as compared with 25,745 in 1920 or approximately similar figures in other previous years. The road has also recently received a considerable number of new locomotives which makes a difference. These factors, however, do not get around a percentage of unserviceable locomotives on April 15 of 27.8 per cent, or the percentage of bad-order cars above noted of 13.5 per cent on the same date.

The savings in transportation expenses were due first to the smaller amount of traffic handled and to lower costs generally. To take one example, coal consumed by locomotives. The number of tons consumed in 1921 was 499,296 as against 640,543 in 1920. The average cost on the tender including handling was $3.68 per ton in 1921; $3.94 in 1920, a reduction of 26 cents. The pounds of coal per thousand gross ton-miles in 1921 were 245 as against 252 in 1920.

New Grain Elevator

One of the outstanding developments on the Western Maryland in 1921 was the work on the new grain elevator at Port Covington, Baltimore, Md. This will increase the present grain storage capacity at this terminal 1,500,000 bushels. The new elevator is expected to be completed in about four months. The capacity of the terminal with the new facilities will aggregate 3,500,000 bushels.

The Western Maryland has built up an important traffic in grain. It receives this commodity largely from the Pittsburgh & Lake Erie at Connellsville and, on the whole, has been securing a larger proportion of the traffic than one might expect. The reason is presumably that the road is making a special effort to get this business and is handling it well. It should be noted, however, that in 1921 the road did not get the same increase in wheat traffic that the roads serving the Gulf ports secured. The wheat tonnage in 1921 was 236,911 as compared with 328,195 tons in 1920. Corn, however, increased from 44,782 tons in 1920 to 276,235 tons in 1921.

Gasoline Motor Car and Trailer for the Baltimore & Ohio

THE BALTIMORE & OHIO has recently received from the Edwards Motor Car Company, Sanford, N. C., a gasoline motor car and trailer for use in passenger service on branch lines out of Green Springs, W. Va.

The motor car has a baggage compartment 9 ft. 3 in. long by 7 ft. 8 in. wide just behind the operator's compartment, the rear of the car being fitted with seats for 22 persons. In addition, the trailer has capacity for seating 34 passengers. The cars are equipped with water coolers and toilets. The total weight of the motor car empty is 17,200 lb., and the weight of the trailer empty is 9,350 lb., or a total of 26,550 lb. It is stated that this equipment is lighter per seated passenger than any other of similar type

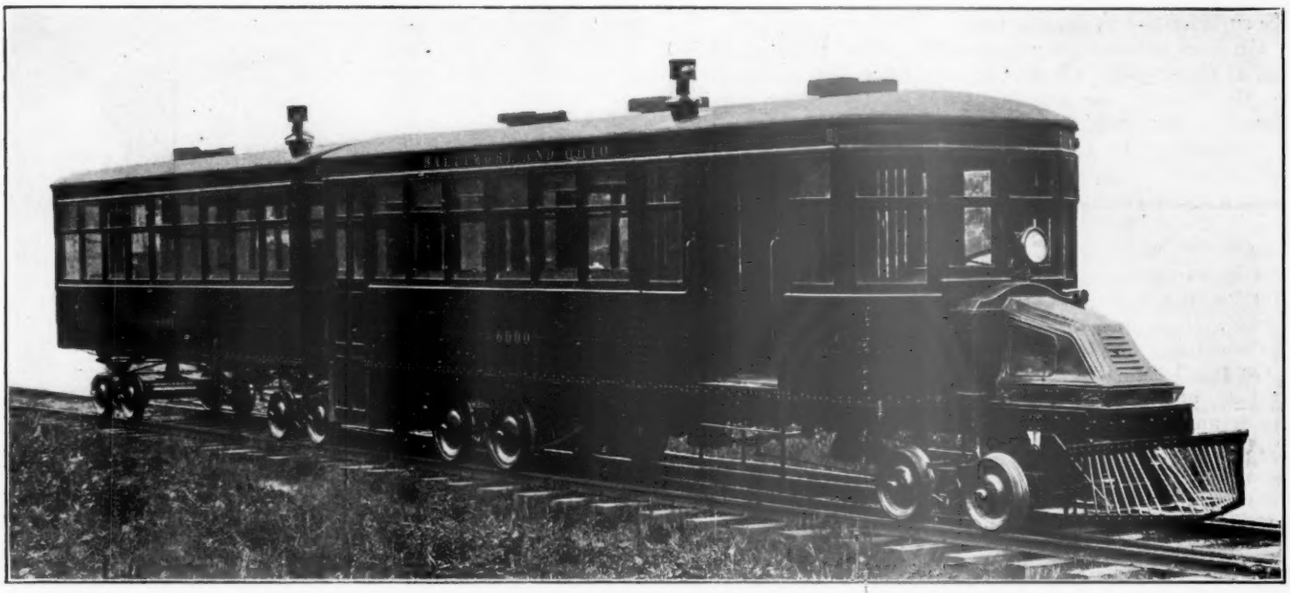
Looking Forward from the Rear of the Trailer

due to the use of heat treated chrome nickel steel and aluminum castings in the construction. On a recent test trip from Baltimore to Philadelphia over the Baltimore & Ohio, these cars made an average speed of 30 miles an hour, the maximum speed being 40 miles an hour.

Both the motor car and the trailer are carried on two four-wheel trucks. The rear truck of the motor car has fixed axles and drives through three chains, two of the chains transmitting the power from the differential shaft, the third chain carrying the drive from the front to the rear axle. It is stated that driving on all four wheels gives unusually good traction and enables the car to run when snow or frost is on the rails. The power to propel the car is furnished by a Kelly-Springfield motor with four cylinders, 4½ in. x 6½ in., which develops 60 hp. at 1,600 r.p.m.

The equipment of the cars includes Westinghouse air brakes, an air alarm whistle, a hot air heating system and 12 volt lighting system. The hot air heaters are of special design with aluminum castings made by the Peter Smith Heater Company, Detroit, Mich. An electric fan is mounted on each heater which drives the hot air through the cars and distributes the heat uniformly.

The air brake system is a standard Westinghouse traction brake except that the compressors are of special design made by the Edwards Railway Motor Car Company. There are two compressors, one driven from the line shaft and one from the axle of the rear truck. The compressor driven from the line shaft is used before the car is in motion. It is then cut out and the compressor driven from the axle is used thereafter. Both compressors weigh only 140 lb. and furnish 10 cubic feet of air per minute. An automatic cut-out device stops the compressors when the required pressure is obtained and a reduction starts them again.



Edwards Motor Car Unit with Seating Capacity for 56 Passengers

A Remarkable Mikado on the Michigan Central

Maximum Power Per Unit of Weight and Utmost Efficiency in Use of Fuel Keynotes of Design

For the past month the Michigan Central has been operating a Mikado type locomotive built by the Lima Locomotive Works, which incorporates many new features of design. On account of the unusual character of this new motive power the railroad has not heretofore made public any of the details of its construction. The following general description has now been given out by the New York Central Lines:

An extraordinary locomotive "No. 8000," which is expected to prove a most important contribution to motive power progress, has just been put in service on the Michigan Central. In numerous details of its design and construction it is radically different from any locomotive previously built and in general appearance it presents striking departures from the familiar features of the ordinary locomotive.

The locomotive was planned and constructed under the personal direction of President A. H. Smith of the New York Central Lines, who specified the several most important main accomplishments to be sought by the new design and made provision for the use of every up-to-date improvement of proved worth, brought to the last degree of refinement for economy and efficiency. The engine is of Mikado type, but contains features never before incorporated in any locomotive.

Locomotive 8000 in its preliminary tests and subsequent daily service hauling heavy trains between Detroit and Toledo, has performed in a way highly satisfactory to the New York Central officials and the builders. In its initial road test, it hauled 100 heavily laden coal cars and later easily pulled a train of 140 cars containing more than 9,000 tons of coal, indicating a capacity of more than 150 cars and load in excess of 12,000 tons.

Locomotive 8000 is considered the last word in efficiency and economy in freight motive power. The principal advantages which it is expected to demonstrate in service are the following:

(1) For its weight, it will deliver more power than any other locomotive in the world.

(2) It will develop more power per ton of coal consumed than any locomotive ever built.

(3) It will prove a locomotive easier to operate and repair than its predecessors, this making for quick turnarounds and safety.

Locomotive 8000 was designed and built to expedite the movement of heavy fast freight trains. With an increase in weight of less than two per cent as compared with the heaviest Mikados in service on the Michigan Central, No. 8000 has an increase of nearly eight per cent in tractive power derived from the forward cylinders and an increase of over 26 per cent when the booster is cut in.

The designers of this locomotive in addition to securing the greatest possible tractive effort with a minimum weight at which strength would not be sacrificed, incorporated the best known practices and devices for securing economy in the use of fuel and water. A type E superheater has been applied which produces a higher temperature of steam than the superheaters in general use.

On Locomotive 8000 a maximum tractive effort of 74,500 lbs. is obtainable. Of this figure 11,000 lbs. are delivered by the booster, the remaining 63,500 lbs. being obtained from the main cylinders.

Refinements in design and the use of alloy of steel and hollow axles and crank-pins have made it possible to eliminate a great amount of weight ordinarily necessary. The weight of the locomotive, exclusive of tender, is 334,000 lbs. The tender, which has a capacity of 10,000 gallons of water and 16 tons of coal, weighs 199,700 lbs. The boiler carries 200 lbs. per square inch steam pressure. The main cylinders are 28 in. in diameter, with 30 in. stroke. The diameter of the driving wheels is 63 in.

On this locomotive for the first time superheated steam is used to operate the air pump, feed-water pump, booster engine and headlight turbo-generator.

The locomotive is equipped with the superheater company's feed-water heater. The heater is located at the front of the engine, above the headlight and near the top of the boiler, on a level above the top of the tank so as to give the condensate pipe line plenty of fall to return the condensed water to the filter on the rear of the tender. The feed-water pump is mounted on the left side of the boiler just back of the smoke-box.

Another important departure from standard railway practice is the feature of superheating the steam before it reaches the main throttle. In locomotive 8000 the steam from the boiler passes through the steam dome into the dry pipe and thence to the superheater units, the dry pipe, which is outside of the boiler, being connected at the forward end direct to the superheater.

Before the steam leaves the dome it is passed through a separator which collects any water that may be carried in the steam, the water being automatically returned to the boiler, which, together with the taking of steam from the highest possible point of boiler, insures absolutely dry steam. From the superheated steam passages in the header, the superheated steam is conveyed to the throttle, located in a throttle box, at the top of the smoke-box and just forward of the stack, another unusual departure from existing designs and practice which was necessary in order to permit the use of superheated steam for the auxiliaries.

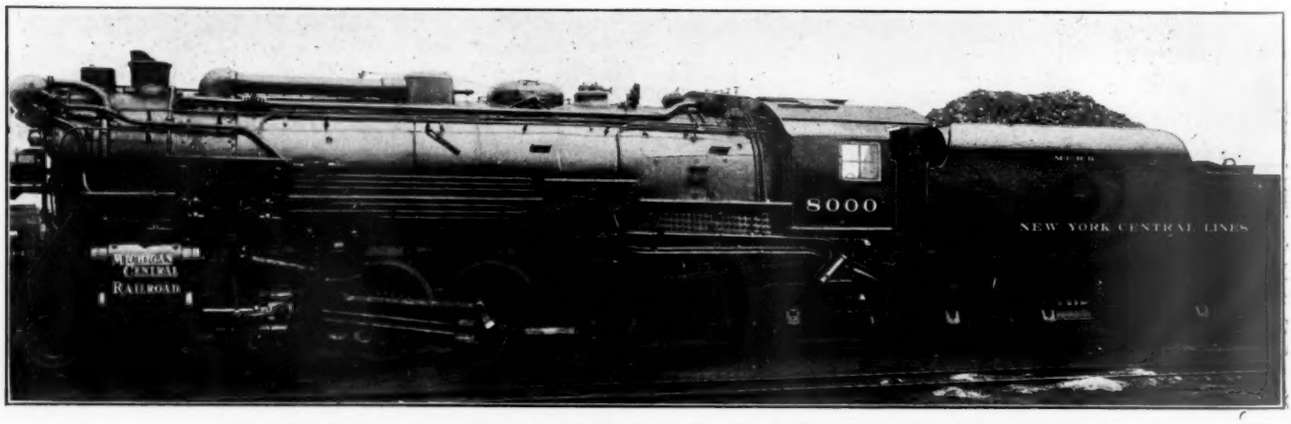
Careful attention has been given to the application of devices to facilitate handling the locomotive by the enginemen, the special equipment consisting of the precision power reverse gear, an Elvin stoker and a power grate shaker. The interior arrangement of the cab is such that the engineer and fireman perform the necessary duties in connection with the operation of the engine with minimum of movement from their positions on either side of the cab, the physical effort of each being practically nil. Even the blowing of the whistle is pneumatically controlled, an air valve being located near the side of the cab and immediately in front of the engineer.

The Front of the Locomotive Presents a Striking Appearance

As is customary on the Michigan Central, the engine is equipped with a water scoop, which eliminates stops and consequent delays for taking water.

Before being put into service the engine was inspected by President Smith, Vice-President E. D. Bronner and General Manager Henry Shearer of the Michigan Central.

Locomotive 8000 has more than lived up to expectations in the short time it has been in service. When it has been in service a sufficient length of time dynamometer tests will be taken and results very definitely determined.



Many Radical Changes Have Been Made in the Construction of This Locomotive

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THE CENTRAL RAILWAY CLUB, Buffalo, owing to the current labor troubles, has postponed until further notice its outing scheduled to take place on the last Thursday in August. The next regular meeting will be held on September 14, at 8 p. m. (standard time) at the Hotel Iroquois.

General News Department

The Ashley, Drew & Northern has announced that it will install oil burners on all its locomotives in the near future.

A Broken Rail caused the derailment of Seaboard Air Line train No. 3 one mile south of Cox, Ga., on the morning of July 17. Five cars left the tracks. A dining car employee was killed and several passengers were injured.

Brotherhood Bank Gets Charter

The Transportation National Bank of Minneapolis, organized by the four transportation brotherhoods, has been granted a charter by the government and is preparing to open for business on September 1. This bank will be patterned after the enginemen's bank at Cleveland, Ohio. It will accept deposits and carry on a regular banking business. The stock will be sold exclusively to the members of the four brotherhoods and will be limited to 10 per cent dividends. The capital of the new bank, as given in the charter application, is $200,000.

Connecting Lines Discuss K. C. M. & O. Problems

Kansas City, Mexico & Orient problems were discussed at a conference held in Chicago on June 18 between the executives of the company and representatives of connecting carriers. The chairman, S. H. Johnson, vice-president and freight traffic manager, stated that no definite conclusions were reached regarding the situation. The plans discussed, however, will not be divulged until reviewed by the Interstate Commerce Commission. It is believed that car routing and readjustment of freight rate divisions were the immediate subjects under discussion.

Baldwin Locomotive Works Issues Quarterly Magazine

Under the title "Baldwin Locomotives," the Baldwin Locomotive Works has published the first issue of a periodical devoted to the interest of transportation and motive power problems. It is intended to illustrate from time to time the newest types of locomotives constructed at the Baldwin Works and to present articles on technical or commercial subjects allied to transportation. The first issue, dated July, 1922, contains articles on the first uniform gage transcontinental railway in South America, on the lubrication of railway car journals, and on South American business. The locomotives described include the Consolidation type built for the Western Maryland, Santa Fe and Pacific types built for the Argentine state railways and also logging and tank locomotives. The interests of foreign readers have not been overlooked as some of the articles are published in both English and Spanish and the locomotive specifications are given also in French and Portuguese.

Railway Club Secretaries Meet

At a special meeting of the Society of Railway Club Secretaries held on Tuesday at the Railway Club of New York, further consideration was given to the matter of enlarging the organization and broadening the scope of its work which was agreed upon at the annual meeting held at Atlantic City in June at the time of the convention of the A. R. A. Mechanical Division. Considerable time was given to a study of a tentative plan which is to be submitted to all secretaries of other organizations representing either directly or indirectly various railroad interests and is to be made a subject of more definite action at a general meeting of those concerned. It is expected that this movement will ultimately result in the formation of an association of mutual advantage to those engaged in secretarial work for the organizations in question. The men identified in this capacity for the railroad clubs have taken the initiative and express their earnest wish to make the suggested organization a medium for increased usefulness and efficiency.

Illinois Central Large Purchaser of Shovels

During the last four years the Illinois Central and the Yazoo & Mississippi Valley have used 129,110 shovels of all kinds at a cost of more than $143,000. Of that number 68 per cent or 88,266, were track shovels, representing an expense of $81,102, or an annual expenditure of $20,275. An average of 74 track shovels were furnished each working day at a daily expense of $70 and, assuming that 50 per cent of the time the track forces used no tools other than shovels, the average life of each shovel was only a little more than two months. The company states that if the employees give the proper care and use to track shovels a reduction of 50 per cent in the purchasing of these implements would be effected. Many shovels are broken by nipping ties, being thrown under pressure bearing materials, pulling the ties, or by driving stakes, etc.

Maine Holds Hearing on Consolidation Proposals

Opposition to an all-New England railroad system and approval of the plan of A. H. Lane, chairman of the transportation directorate of the State Chamber of Commerce and Agricultural League, for linking up the Maine railroads with the New York Central and other trunk lines were voiced at a hearing on July 13, by the committee appointed by Governor Baxter to get the views of Maine people on the proposed consolidation, according to the Boston Transcript.

Judge Benjamin F. Cleaves, executive secretary of the Associated Industries of Maine, declared his belief that if the railroads of Maine were left alone within the next 15 years they would be back in as good condition as several years ago. Others who participated in the discussion asserted that the roads must have help. Among those present was Professor William Z. Ripley of Harvard University, who prepared the tentative consolidation proposals for the Interstate Commerce Commission.

James Q. Gulnac of Bangor, president of the State Chamber of Commerce, said he thought there was an absolute need for the consolidation of the Maine Central and Bangor & Aroostook railroads.

Standards for Overhead Wire Crossings

The American Engineering Standards Committee, by letter ballot, has approved the National Electrical Safety Code of the Bureau of Standards which covers the generation, distribution and utilization of electricity for power, light and communication.

In making public this decision, the Standards Committee announces that there is now in process of formation a thoroughly representative sectional committee to consider any revisions of Part 2 of this Code, "Rules for the Installation and Maintenance of Overhead and Underground Electrical Supply and Signal Lines," which may be deemed necessary by any of the interested parties. There are also being organized three sub-committees to take up the unification of crossing specifications under the three following heads:

Signal lines crossing railways.
Power lines crossing railways.
Power lines crossing signal lines.

These committees are being organized in conformity with the action of the recent conference (March 2) on the standardization of crossing specifications at which there were present representatives of 14 national, engineering, utility and industrial associations, four departments of the federal gov-

ernment, various state commissions of Connecticut, Iowa, Minnesota, New York, and of the telephone, telegraph and cable companies.

Plan for Settlement of Coal Strike Fails

The President's plan for a settlement of the coal strike by a submission of all points in controversy to a commission of arbitration having failed because of a flat rejection of the plan by the United Mine Workers, President Harding on Monday invited the operators, who had accepted the plan, to return to their mine properties and resume operation. The President had received the replies of the operators to his proposal during the day, and while some groups of them had accepted only conditionally, he had construed them as an acceptance by the majority of the principle of arbitration. He expressed his disappointment at the lack of unanimity among the operators but his gratitude to the large majority who had pledged readiness to resume activity under the government's proposal and said that "we have now reached a point, owing to the refusal of mine workers and the minority of your operators, to accept the proposed arbitration, where the good offices of the government in seeking a voluntary adjustment of the dispute between mine operators and mine workers are without avail."

It was explained by administration officials that the administration had now exhausted its resources and that efforts would now be made to test the ability of the operators to resume operation, as many of them had taken the position that if assured protection they could induce a large percentage of their employees to return to work. Legislation to protect the public interest will be sought, however, as soon as the House returns after adjournment to August 15.

Long Island Establishes "Committee on Public Relations"

The Long Island on July 19 announced the appointment and organization of a "Committee on Public Relations." The committee consists of C. D. Baker, general superintendent; J. F. Keany, general solicitor; C. L. Addison, assistant to the president; Donald Wilson, general freight agent; P. H. Woodward, general passenger agent, and George Flatow, publicity agent.

In addressing the committee at its first official meeting, Ralph Peters, president of the road, referred to the work that the company had already done to bring about closer co-operation between management, employees and public, and said that the time had come for an expansion of such activity. Continuing, he said:

"I believe that the public is beginning to realize that it has been duped, in many instances, by political regulation, rather than economic regulation of many of our industries. The public is beginning to realize that capital, the public and the government must all co-operate through a mutual understanding. The loose way in which language and figures are used by so-called experts in economics, must be counteracted by plain and simple facts which all can understand. The propaganda of many employees' organizations must be met with clear, patient and painstaking statements of facts.

"The railroad employees need more liberal education. They need information that will give them courage to speak for the company. It may be that officers of this railroad and its principal employees have been reticent in speaking out on railway questions for fear of incurring the displeasure of their higher officers. This we want to overcome, and I hope the committee on public relations will plan to supply officers and employees with such facts as will enable them to speak authoritatively and clearly on matters pertaining to our own situation, as well as railroad problems generally."

The committee elected Mr. Woodward, chairman; Mr. Wilson, vice-chairman; Mr. Flatow, secretary, and T. P. Brennan, special representative.

New York Railroad Club Officers Attend Shore Dinner

Celebration of the Golden Anniversary of the organization of the New York Railroad Club will be observed in a more pretentious way next December than the usual annual dinner at the Hotel Commodore, New York. Plans to this effect were initiated last Tuesday evening with a shore dinner at the Atlantic Yacht Club in honor of the officers and members of the executive committee. The host of the occasion was Daniel M. Brady, the club's oldest member and active in its affairs from its inception. The number of guests participating was nearly 100 and would have been greater had it not been for the absence of railroad officers who at the last minute were forced by labor disturbances to cancel their acceptances and remain in direct touch with the properties they have in charge.

At the dinner formal addresses were made by L. F. Loree, president of the Delaware & Hudson, and Elisha Lee, vice-president of the Pennsylvania. Both speakers stressed their conclusion that the present labor troubles are largely attributable to politics and to politicians who use the railroads to create political issues for their personal advantage, and to labor leaders who seek chiefly to gain their personal ends, while the public suffers from their interference with the legitimate functioning of public utilities and industrial interests. In these comments they were joined by Frank Hedley, president of the Interborough Rapid Transit, and they appeared to be agreed that unless a strictly impartial tribunal is created with sufficient power to safeguard the public and vested interests on a parity in this regard with the United States Supreme Court, the situation will become worse instead of better. Such a tribunal should be free from every possibility of bias in behalf of either side of pending controversies.

Mr. Lee dwelt upon the method of handling disputes on the Pennsylvania as a result of which so far as known at present no grievances are pending on that system and none is at this time anticipated that cannot be amicably adjusted. He also indicated that men and women should meet their own responsibilities at the polls. Others spoke concerning the value of the railroad clubs, notably in that they assist in training and educational work for young men in railroad service. It was urged that railroad companies give to the clubs substantial practical encouragement.

Railway Returns for May

The Interstate Commerce Commission's summary of railway revenues and expenses of Class I roads for May is as follows:

Item	May 1922	May 1921	Four months 1922	Four months 1921
Average number of miles oper.	235,228.30	234,721.28	235,183.99	234,715.34
Revenues:				
Freight	$319,361,730	$313,132,827	$1,533,531,215	$1,548,206,619
Passenger	*85,532,720	193,500,428	‡406,840,345	§475,187,308
Mail	7,608,836	7,828,163	37,223,429	41,428,923
Express	11,759,010	6,961,162	46,992,677	34,062,729
All other transportation	15,171,893	13,367,849	67,850,895	63,705,078
Incidental	8,953,161	9,634,038	41,763,407	49,719,627
Joint facil.—Cr.	741,458	628,691	4,007,278	3,257,402
Joint facil.—Dr.	180,910	193,647	869,505	971,706
Railway operating revs.	448,947,898	444,859,511	2,137,339,741	2,214,595,980
Expenses:				
Maint. of way and struct.	68,033,436	65,095,833	275,635,778	301,200,518
Maint. of equip.	100,893,624	101,100,850	488,619,683	542,164,166
Traffic	7,266,242	7,200,205	35,396,644	35,961,271
Transportation	163,026,584	188,969,442	832,950,238	1,011,774,400
Miscel. opera.	3,814,595	3,884,184	18,514,341	20,705,707
General	13,004,812	14,177,703	65,772,732	73,333,294
Trans. for invest.—Cr.	450,416	562,941	2,200,494	2,651,789
Ry operat. ex.	355,588,877	379,865,276	1,714,688,922	1,982,487,667
Net rev. from railway operations	93,359,021	64,994,235	422,650,819	232,108,313
Ry. tax accruals	25,673,518	22,543,709	119,964,000	109,990,623
Uncol. ry. rev.	135,936	103,726	554,173	419,939
Ry. operat. in.	67,549,567	42,346,800	302,132,646	121,697,751
Equip. rents—Dr. bal.	4,002,296	3,967,439	21,748,843	19,137,246
Jt. fac. rent—Dr. bal.	1,566,652	1,436,125	7,124,792	8,142,603
Net ry. oper. income	61,980,619	36,943,236	273,259,011	94,417,902
Ratio of exp. to rev. (per cent)	72.20	85.39	80.23	89.52

*Includes $2,619,329, sleeping and parlor car surcharge.
†Includes $2,717,926, sleeping and parlor car surcharge.
‡Includes $12,102,529, sleeping and parlor car surcharge.
§Includes $13,101,538, sleeping and parlor car surcharge.

Traffic News

C. A. Bland has been appointed general traffic manager of the El Paso (Tex.) Chamber of Commerce.

As a further step in its efforts to eliminate the abuse and misuse of commutation tickets the Long Island has just established a new rule which requires commuters to buy their own tickets and sign them with pen and ink at the time of purchase.

It is reported that the cities of Norfolk, Portsmouth and Newport, Va., will raise $10,000 to fight Boston's appeal to the Interstate Commerce Commission for an equalization of all import and export freight rates with other Atlantic ports. A hearing will be held in Boston on September 12.

The Traffic Club of Augusta, Ga., has been organized with E. W. Matthews, traffic manager of the Riverside Mills, as president, and R. B. Arthur, commercial agent of the Southern, as secretary; the election of other officers being postponed pending the report from committee on organization.

Traffic Statistics for April

The revenue ton miles of freight handled by the Class 1 railroads in April totalled 22,284,788,000 as compared with 23,083,759,000 for April, 1921, according to the monthly report of revenue traffic statistics compiled by the Interstate Commerce Commission. The decrease is accounted for by the falling off of coal production due to the strike. For the first four months of the year the ton miles totalled 100,846,975,000, as compared with 96,141,529,000 in 1921. Freight revenues, however, showed a decrease from $1,230,964,365 in 1921 to $1,209,894,593 in 1922 and the average revenue per ton mile was 1.2 cents as compared with 1.28 in 1921. The revenue passenger miles showed a decrease both for April and for four months as compared with 1921. For April the total was 2,701,720,000 as compared with 2,846,848,000 and for four months it was 10,395,936,000 as compared with 12,170,328,000. Passenger revenues for the four months were $321,272,002 as compared with $381,559,164 in 1921 and the number of revenue passengers per car was 14.66 as compared with 16.4. The figures are for 183 roads, excluding switching and terminal companies.

Coal Production

A new cause has arisen to limit the production of coal, namely, local congestion of traffic associated with the strike of the railway shopmen, according to the weekly bulletin of the Geological Survey. Because of the uncertainties of the situation it is difficult to forecast production for the week of July 10-15, but the record of the first four days suggest that the output of bituminous coal can hardly exceed 4,300,000 tons. Production of anthracite continues practically zero.

Final returns on the week of Independence Day, the fourteenth of the strike, show that 3,936,000 net tons of soft coal and 23,000 tons of anthracite were produced, a total of all coal of 3,959,000 tons.

The trend of production in the fifteenth week of the strike (July 10-15) is indicated by the cars of coal loaded daily. Monday's loadings (14,952 cars) were lower than those of Monday in other recent weeks, yet on Tuesday loadings dropped to 12,829 cars, and on Thursday they fell to 11,584, the lowest on any Thursday since mid-April.

The cause of the decrease is said to have been congestion of traffic resulting indirectly from the shopmen's strike. The first districts to be affected were Logan and Eastern Kentucky, but in Western Kentucky and Southwestern Virginia also loadings soon began to decrease, and by Wednesday even the Pocahontas, Tug River, and Kenova-Thacker districts were producing far below normal. In the non-union fields of Pennsylvania and in Alabama and the Far West no decrease in output had been reported up to Wednesday. No reports have been received to indicate any significant change in the number of men on strike.

Fluctuations in Coal Production During Last Five Years

Foreign Railway News

German Car Plant Burns

According to press dispatches from Berlin, the Orenstein & Koppel Works, builders of cars, was completely destroyed by fire on July 16.

Reduction in British Railway Wages

LONDON.

Owing to the fall in the cost of living in Great Britain, the railway workers' war bonus has been reduced by 4 shillings (about 97 cents at the normal rate of exchange) per week. However, a number of classes have not been affected by this reduction, as they have already reached their standard of wages.

French Railway Earnings

The gross earnings of the leading railways of France from January 1 to June 3 are as follows, according to the Economic Review (London):

	Francs (mill.) (a) 1922	Francs (mill.) (b) 1921	Increase (actual)	% per kilometer
State	394.0	385.7	38.3	10.78
Paris-Lyon-Méditerranée French section	702.2	663.4	38.7	5.8
Nord	412.1	368.4	43.7	11.6
Orleans	359.2	352.3	6.8	1.94
Est	393.5	355.6	37.8	10.64
Midi	182.0	166.5	15.5	9.31
Alsace-Lorraine and Guillaume-Luxembourg	187.3	170.7	16.5	9.72

(a) Estimated. (b) Ascertained.

Switzerland Finances Electrification

LONDON.

The Swiss Federal Council has decided to fix the amount of the second railway electrification loan at 150,000,000 francs (about $28,713,000 at the present rate of exchange) only, although the first intention was to take up 200,000,000 francs (about $38,540,840 at the present rate of exchange). The amount subscribed was 280,000,000 francs (about $53,957,173 at the present rate of exchange). The cause of the reduction of the amount of the loan, which was issued at 4½ per cent, is to be looked for in the expectation that the rate of interest in Switzerland will be further reduced. Electrical locomotives now cost in Switzerland only 500,000 francs (about $96,349 at the present rate of exchange) each as compared with the former price of 900,000 francs (about $173,429).

Further Cheap Railway Fares in Great Britain

LONDON.

The railway companies of Great Britain have announced further cheap railway fare facilities, as follows:

Special day excursion tickets for individuals are to be reduced to a single ordinary fare for the round trip. At present the charge is a single fare and a third. These tickets, available for the day of issue only, will be issued to passengers in the following circumstances: (1) Local journeys from holiday resorts, (2) local journeys from towns to holiday resorts within a radius of 60 miles, (3) passengers attending local events, such as agricultural and flower shows, regattas, bazaars, etc., (4) on early closing days to towns within a radius of 60 miles, (5) to important cricket and football matches from stations within a radius of 60 miles, (6) to metropolitan sports clubs, (7) pleasure party tickets, with a minimum number of 12 adult fares. The reductions are to come into force on July 1, 1922.

First, second and third class walking tour tickets, available on the day of issue, enabling individual passengers to travel out to one station and return from another are also to be introduced. These tickets are to be issued at two-thirds of the ordinary single fare from point to point to stations within a radius of 30 miles.

Improved Condition of Palestine Railway System

Local communications have been greatly improved within the past year, and today Palestine enjoys probably the best railway, telephone and telegraph and mail service in the Near East, according to advices from the U. S. Shipping Board representative at Constantinople.

An efficient railway system in Palestine is a heritage of the war. In their military operations the British built the line from Kantara on the Suez canal to a point near Gaza, connecting there with the old pre-war narrow gage system. The gage was broadened and an extension built into Haifa. The system, now 500 kilometers in length, connects with the Egyptian State Railways at Kantara and with the Syrian railways in the north.

The motive power and rolling stock is in first-class condition. American locomotives built in 1918 for the British war department are used, having evidently been turned over to the Palestine railways. A few mountain saddle-tank type locomotives built in Leeds, England, have been added recently. A number of new passenger coaches from England, together with international sleeping cars afford good accommodations to travelers. Daily passenger and mail service are proving beneficial to business.

L. & N. W. Asks Employees for Suggestions

LONDON.

In a circular Arthur Watson, general manager of the London & North Western, asks employees for suggestions as to improved service and efficiency. The circular reads in part:

"It is further recognized that almost every railway employee has ideas concerning the management or working of his railway, but that there has existed a certain amount of diffidence, and in some cases, difficulty, in making known those ideas to some one in authority. Suggestions from the staff on all matters likely to promote the economical working of the concern or to increase the receipts are, therefore, welcomed. Such matters are:

(a) Any new method—mechanical or electrical—which it is believed will result in economy.
(b) The elimination of the waste of engine power, stores and materials.
(c) Improved methods of working trains or road vehicles and accelerating movement.
(d) Improvement in rolling stock and equipment.
(e) Improvements in passenger and goods station working.
(f) Improvements in stationery forms, office methods and equipment.
(g) The prevention of accidents.
(h) The improvement of relations with our customers and the securing of additional business to the company."

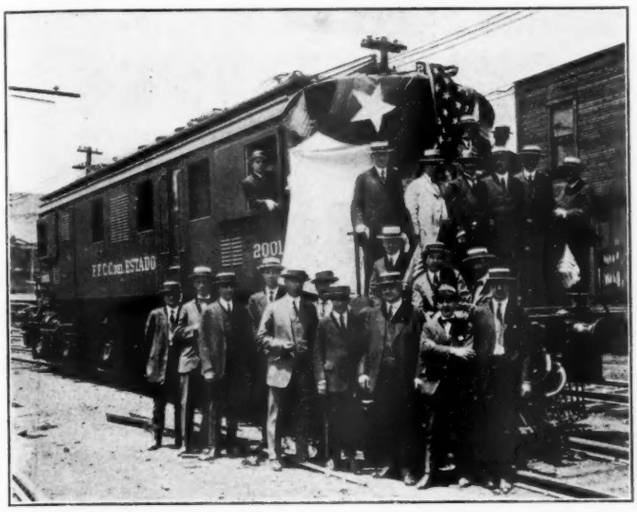
Decrease in Railway Accidents in Great Britain

LONDON.

As compared with the year 1920, there was a decrease in the number of passengers killed from 121 to 89 in the year 1921, on the railways of Great Britain and Ireland, while the number injured fell from 2,675 to 2,095. There was a still more satisfactory decline in the number of railway employees killed and injured, the figures being 231 killed and 2,892 injured as compared with 376 killed and 4,414 injured in the year 1920. The figures for individuals not included in the two foregoing categories were: killed 406 for the year 1921 as compared with 409 killed in the year 1920, and injured 168 in the year 1921, as compared with 286 in 1920. The grand total of passengers, employees and other persons was 726 killed and 5,155 injured in 1921, as against 906 killed and 7,375 injured in 1920. It is noteworthy that the number of accidents due to failure of rolling stock or permanent way fell from 13,675 to 9,408, an indication of the increasing care exercised by the companies with a view to the safety of passengers and employees. The number of accidents to trains was also considerably less. There were only 14 collisions between passenger trains in 1921, as compared with 39 in 1920, 49 collisions between passenger trains and freight trains or light engines in 1921, as compared with 62 in 1920, and 85 collisions between goods trains, light engines or other moving vehicles in 1921, as compared with 187 in 1920. There was also a decrease of 153 or nearly 33 per cent in the number of derailments.

Officials of Chilean State Railways Inspect Their New Equipment at Westinghouse Plant

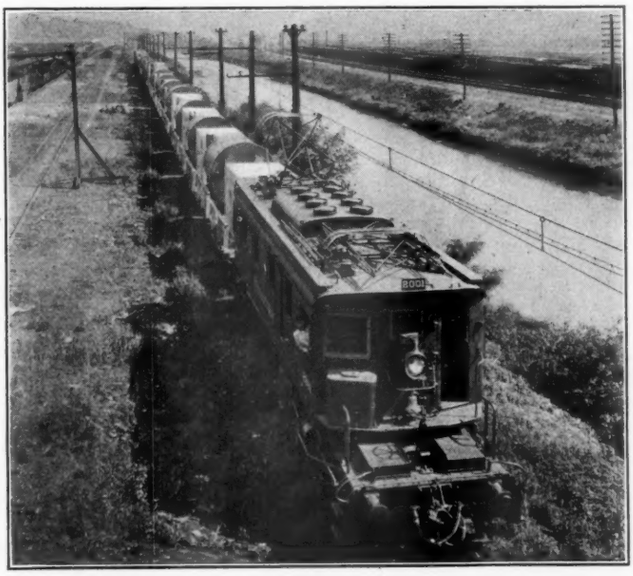
Manuel Trucco, director general, and other representatives of the Chilean State Railways recently made a tour of inspection of the Westinghouse Electric & Manufacturing Company's plant at East Pittsburgh where the $7,000,000 order for electrification equipment, received last October, is now being fulfilled. Accompanying Senor Trucco and the other officers of the railway were



One of the Locomotives for Chile

Guy E. Tripp, chairman of the board of directors, E. M. Herr, president, and other representatives of the Westinghouse Company.

Only a few days prior to the visit of the Chilean representatives, a train, almost a quarter of a mile long, left the Westinghouse works loaded with sub-station equipment for the Chilean State Railways. This was the first shipment of material on this order.



A Train Load of Equipment for Chile with a Chilean Locomotive at the Head

At the head of the train was one of the 39 Baldwin-Westinghouse locomotives to be furnished for the electrification.

An accompanying photograph shows the group of Chilean Railway officials with representatives of the Westinghouse Electric Company and Baldwin Locomotive Company in the yards of the Westinghouse East Pittsburgh plant following the inspection tour.

Equipment and Supplies

Locomotives

THE BALTIMORE & OHIO is inquiring for 15 Pacific type locomotives.

THE CANADIAN PACIFIC is inquiring for 15 Mikado type and 15 Pacific type locomotives.

THE SOUTHERN RAILWAY has ordered six 0-8-0 type switching locomotives from the Baldwin Locomotive Works.

THE CHICAGO & NORTH WESTERN is considering repairs to a number of its locomotives, although no definite decision reached regarding number or time when.

THE DELAWARE, LACKAWANNA & WESTERN, reported in the *Railway Age* of July 15 as inquiring for 5 Pacific type and 25 Mikado type locomotives, has ordered this equipment from the American Locomotive Company.

THE LEHIGH VALLEY is having 5 Consolidation type and 10 switching locomotives repaired at the shops of the American Locomotive Company and 6 Consolidation type and 9 switching locomotives at the shops of the Baldwin Locomotive Works.

THE NATIONAL ENAMELING COMPANY, Granite City, Ill., has ordered one, 0-6-0 type switching locomotive from the American Locomotive Company. This locomotive will have 21 by 26 in. cylinders and a total weight in working order of 141,000 lb.

THE ILLINOIS CENTRAL, reported in the *Railway Age* of July 15 as inquiring for locomotives, has ordered 15 switching locomotives from the Baldwin Locomotive Works, 25 Santa Fe type locomotives from the Lima Locomotive Works and 25 Mikado locomotives from the American Locomotive Company.

Freight Cars

THE NORTHERN PACIFIC is inquiring for 1,000 sets of steel center sills.

THE CANADIAN PACIFIC is asking for prices on from 250 to 500 refrigerator cars.

THE CHICAGO, INDIANAPOLIS & LOUISVILLE is inquiring for 300 gondola cars of 50 tons' capacity.

THE UNION REFRIGERATOR TRANSIT COMPANY, Milwaukee, Wis., is inquiring for 350 refrigerator cars.

THE CHESAPEAKE & OHIO is inquiring for 50 steel underframe refrigerator cars of 40 tons' capacity.

THE NORFOLK & WESTERN has ordered 1,000 single sheathed box cars of 50 tons' capacity from the Ralston Steel Car Company.

THE MANILA RAILROAD COMPANY has ordered 50 cane cars of 30 tons' capacity from the Koppel Industrial Car & Equipment Company.

THE ILLINOIS CENTRAL, reported in the *Railway Age* of June 15 as inquiring for repairs to 600 gondola cars, has contracted for this work with the Ryan Car Company.

THE NEW YORK CENTRAL will have repairs made to 500 freight cars at the shops of the Ryan Car Company and to 500 cars at the shops of the Buffalo Steel Car Company.

THE PITTSBURGH & WEST VIRGINIA, reported in the *Railway Age* of July 15 as inquiring for 1,000 hopper cars of 55 tons' capacity, has ordered this equipment from the Cambria Steel Company.

THE PHILADELPHIA & READING, reported in the *Railway Age* of June 17 as inquiring for 1,000 gondola cars of 70 tons' capacity, has ordered 500 cars of this type from the Pressed Steel Car Company and 500 from the Standard Steel Car Company.

THE MISSOURI PACIFIC will have repairs made to 2,500 freight cars at the shops of the following companies: American Car & Foundry Company, 1,250 cars; Mount Vernon Car Manufacturing Company, 250 cars and Sheffield Car & Equipment Company, 1,000 cars.

THE CHICAGO, BURLINGTON & QUINCY, reported in the *Railway Age* of July 15 as preparing inquiries for repairs to a large number of cars, is now inquiring for repairs to 500 box cars and 500 steel gondolas. This company may call for inquiries for further repair work later.

THE HUMBLE OIL & REFINING COMPANY, Houston, Texas, reported in the *Railway Age* of July 15 as inquiring for three 12-yd. capacity air dump cars, has revised the inquiry to three 16-yd. capacity air dump cars with alternate on one 20-yd. capacity air dump car.

THE BUFFALO CREEK & GAULEY, reported in the *Railway Age* of July 15 as inquiring for from 200 to 300 hopper cars, has ordered 300 steel hopper coal cars of 55 tons' capacity from the American Car & Foundry Company. This road is owned by the Elk River Coal & Lumber Company.

THE CHICAGO, MILWAUKEE & ST. PAUL, reported in the *Railway Age* of July 15 as inquiring for repairs on 1,000 to 1,500 box cars and 250 gondola cars, is now asking for prices on repairs also on 750 wooden gondola cars of 30 tons' capacity and 450 wooden gondola cars of 40 tons' capacity.

THE BALTIMORE & OHIO has let contracts for freight car repairs as follows: To Baltimore Car & Foundry Company, 1,000 steel coke cars; American Car & Foundry Company, 1,000 box cars; Pullman Company, 1,000 composite gondola cars; Pressed Steel Car Company, 1,000 box cars; Hamilton Car Company, 500 box cars; Youngstown Steel Car Company, 500 hopper cars; Illinois Car & Manufacturing Company, 500 box cars, and General American Car Company, 500 gondola cars.

Passenger Cars

THE WINSTON-SALEM SOUTHBOUND is inquiring for 6 coaches and three baggage and mail cars.

THE CHICAGO, AURORA & ELGIN, reported in the *Railway Age* of July 8, as contemplating the purchase of a number of new electric passenger cars, is said to be preparing inquiries for 20 all-steel coaches.

THE PHILADELPHIA & READING, reported in the *Railway Age* of July 1 as inquiring for 5 baggage cars and 5 combination baggage and mail cars, has ordered this equipment from the American Car & Foundry Company.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS, reported in the *Railway Age* of July 15 as considering the purchase of 17 passenger cars, has ordered five baggage cars, four mail cars, two compartment cars and four coaches from the American Car & Foundry Company.

THE CHICAGO, NORTH SHORE & MILWAUKEE, in addition to its recent order for 15 merchandise dispatch cars and one utility line car from the Cincinnati Car Company, has purchased seven motor limited coaches, two parlor observation cars and one motor dining car from the same company.

BROOKLYN RAPID TRANSIT.—The New York Transit Commission has issued an order for increased service on the rapid transit lines; the order includes the purchase of 50 new steel passenger cars for subway use and the order has been accepted by the New York Consolidated Railroad Company. The company will retire 65 of the present wooden car equipment.

Iron and Steel

THE PENNSYLVANIA is expected to issue inquiries soon for 5,000 to 10,000 tons of car repair plates.

THE SOUTHERN PACIFIC has placed an order with the Tennessee Coal, Iron & Railroad Company, Birmingham, Ala., for 30,000 tons of steel rails.

THE UNION PACIFIC is reported to have placed an order with the Illinois Steel Company for 10,000 tons of steel rails.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has issued inquiries for its third quarter requirements, including 500 tons of plates and 700,000 small bolts.

THE MISSOURI, KANSAS & TEXAS has placed an order with the Mount Vernon Bridge Co. for 1,400 tons of steel for repairs to its locomotive shop at Waco, Texas.

THE ILLINOIS CENTRAL has placed orders with the American Bridge Company for 369 tons of structural steel and field rivets and for 142 tons of steel deck plate girder spans.

THE MICHIGAN CENTRAL will receive bids until October 1 for its requirements of steel sheets, bars, shapes, plates, billets, springs, axles, tubes, crank pins, piston rods, steel rope, wire, bolts, nuts, washers, cotters and keys, rivets and bar iron.

THE JAVA STATE RAILWAYS have ordered through the Netherlands Government, Colonial Department, New York City, from the Blaw-Knox Company, 60 galvanized steel transmission towers making a total of about 160 tons of steel. These towers form a part of a transmission line to be used to transmit power to the Batavia-Buitenzorg Line, about 40 miles long, which is now being electrified. The same company is inquiring for 4,000 unfinished car wheel tires to weigh about 400 lb. each.

Track Specialties

THE MISSOURI, KANSAS & TEXAS is inquiring for 400 tons of tie plates.

Machinery and Tools

THE NEW YORK CENTRAL has ordered a 6 ft. American radial drill from the American Tool Works.

THE CHESAPEAKE & OHIO has bought a 5 ft. Western radial drill from the Dale Machinery Company.

THE ILLINOIS CENTRAL, reported in the *Railway Age* of June 10 as inquiring for a large list of machine tools, is expected to begin placing orders for these supplies this week.

THE ATCHISON, TOPEKA & SANTA FE has placed an order with the Whiting Corporation for a 240-ton screw jack locomotive hoist to be used on the Gulf, Colorado & Santa Fe.

THE LOUISIANA & ARKANSAS in connection with the construction of a new shop at Stamps, Ark., will receive bids until 11:00 a. m., July 31, for the following: Three overhead electric traveling cranes, one of 90 tons' capacity, 1 of 10 tons' and 1 of 7½ tons'; steam heaters with motors and diffusing outlets; 150 hp. boilers of either return tubular, water tube or Scotch marine type; 2,100 kw. d. c. electric generators connected directly to four valves, unaflow condensing or non-condensing, turbines condensing, full Diesel or semi-Diesel engines; one 69-in. wheel lathe; one 24-in. slotter; one 48-in. boring mill; one 24-in. shaper; one 2¼-in. flat turret lathe; one 48-in. car wheel borer; one 4-ft. radial drill; one 18-in. tool room lathe; one double car wheel press; one 2,500-lb. steam hammer; one 1½-in. forging upsetting machine; one 1¼-in. bolt heading upsetting forging machine; one condenser, boiler feed pump and feed water heater.

Signaling

THE RARITAN RIVER has placed an order with the Hall Switch & Signal Company for 19 unit type color light signals, 52 relays and 36 switch boxes.

THE NEW YORK CENTRAL has placed an order with the Hall Switch & Signal Company for 59 Style L top post motor signals with accessory material and 156 neutral relays and 52 motor type relays.

THE MISSOURI PACIFIC has placed an order with the General Railway Signal Company for one 36-lever Saxby & Farmer interlocking machine and four Model-2, form "B" locks, all of which are to be installed by company forces at Kenneth, Kansas.

Supply Trade News

K. C. Gardner, formerly general sales manager, central district, of the Pressed Steel Car Company, is now associated with the **Greenville Steel Car Company,** Greenville, Pa., as vice-president in charge of sales. Mr. Gardner's headquarters are at Greenville.

S. H. Lanyon has been appointed manager of the recently opened San Francisco branch office of the **Okonite Company,** Passaic, N. J., manufacturers of insulated wires and cables, splicing tapes, etc. His office is located at 509 New Call building.

J. H. Rodger, western manager of the **Safety Car Heating & Lighting Company,** with headquarters at Chicago, has been promoted to vice-president with the same headquarters, in charge of that company's western business. Mr. Rodger entered the railway supply business in 1899, in the service of the Standard Coupler Company, which company he left in 1905 to become assistant to the president of the Monarch Machine Company, New York. In 1911, he became a sales agent of the Safety Car Heating & Lighting Company in its Chicago offices. He was promoted to western manager of that company in 1919, which position he was holding at the time of his recent promotion.

J. H. Rodger

G. A. Woodman has been appointed sales manager of the **Northwestern Malleable Iron Company,** Milwaukee, Wis., with offices at 237 Railway Exchange building, Chicago. He will have charge of the sales of the Joliet journal box which was formerly handled by the Joliet Railway Supply Company, Chicago, now the Republic Railway Equipment Company, of the same city. Mr. Woodman was born at Dunkirk, N. Y., on August 21, 1866. On August 21, 1883, he entered the service of the Brooks Locomotive Company as a machinist's apprentice and was successively thereafter, in the drafting department, same company; mechanical engineer, Lima Locomotive & Machine Company; assistant master car builder, Swift & Company, Chicago; assistant superintendent, American Car & Foundry Company, Chicago; mechanical engineer, Kirby Equipment Company, Chicago, when that company sold the Woodman journal box, the name of which was later changed to the Franklin journal box; and the National Car Equipment Company, Chicago. He retired two years ago and has been inactive in the railway supply business up to the time of his recent appointment.

G. A. Woodman

G. M. Jacobsen has joined the service staff of the **Franklin Railway Supply Company,** New York, and is now in charge of Southern territory with headquarters at Atlanta, Ga., relieving **B. C. Wilkerson,** who has been appointed a special service representative of the company on locomotive booster applications.

The **U. S. Light & Heat Corporation,** of California, has been incorporated as a subsidiary of the U. S. Light & Heat Corporation, Niagara Falls, N. Y. A site has been leased and construction started on a new plant at Oakland, Cal. The new plant is to handle the company's business on the Pacific Coast, and it is expected that production will start in the new factory about October 1.

Republic Railway Equipment Company

The Republic Railway Equipment Company, Inc., Chicago, has been organized to take over the Joliet Railway Supply Company, which owns and operates a modern brake beam and bolster plant at 93rd street and Drexel avenue, Chicago. At a meeting of the board of directors of the new company in Chicago on July 7, Fred A. Poor, president of the P. & M. Company, was elected chairman of the board; Burton Mudge, president of Mudge & Company, was elected president; J. H. Slawson, vice-president of the Joliet Railway Supply Company, was made first vice-president; C. A. Carscadin, vice-president of the Joliet Railway Supply Company, was elected vice-president, sales; A. M. Pearson, secretary of Mudge & Company, was made secretary, and W. F. Hoffman, treasurer. J. E. Simons, manager of sales of the Joliet Railway Supply Company, has been appointed to the same position in the new organization. **Fred A. Poor** was born in Maine in 1870. He was superintendent of electric signals of the Illinois Central with headquarters at Chicago from 1892 to 1900. In the latter year he entered the service of the Weber Railway Joint Manufacturing Company as western sales manager with office in Chicago, which position he held until 1906, when that organization was merged with the Rail Joint Company, at which time he was sent to London, England, as foreign manager. In 1908 he returned to this country as western sales agent with headquarters at Chicago, which position he held until 1914, when he became president of the P. & M. Company which he had organized in 1905. In 1914 he became president also of the Vermillion Malleable Iron Company; in 1916, president of the P. & M. Company, Ltd., of Canada; in 1921, chairman of the board of the Canton (Ohio) Forge & Axle Company, and most recently chairman of the board of the Republic Railway Equipment Company, all of

F. A. Poor

Burton Mudge

which positions he is now holding. **Burton Mudge** was formerly connected with the operating departments of the Atchison, Topeka & Santa Fe, the Chicago & North Western, the Fort Worth & Denver City, and the Chicago, Rock Island & Pacific. He resigned as assistant general manager of the last named road in 1908 to enter the railway supply business and in September that year he organized the firm of Burton W. Mudge & Bro., representing the Commonwealth Steel Company, which later became Mudge & Co. In January of this year Mr. Mudge was elected vice-president and director of the Pilliod Company, New York, which duties he assumed in addition to those with Mudge & Co. His work as president of the Republic Railway Equipment Company will also be in addition to that mentioned above. **J. H. Slawson** was born at Cleveland, Ohio. He entered railroad service in 1890 as a clerk in the office of the assistant general freight agent of the Lake Shore and Michigan Southern (now a part of the New York Central) and was thereafter employed successively in the revision department, the tariff bureau, the auditing department and the office of the chief engineer. In 1902 he entered the service of the Malleable Castings Company at the Sharon, Pa., plant with special duties pertaining to railroad matters. He later became chief clerk, following which he was promoted to local treasurer in charge of the finances of the Sharon plant. He was transferred to Chicago in 1912, as sales agent, which position he held until 1917, when he was elected vice-president of the Joliet Railway Supply Company, a subsidiary of the Northwestern Malleable Iron Company, Milwaukee, Wis. He was holding this position up to the time he became first vice-president of the new organization. **C. A. Carscadin**, vice-president, sales, was born in Buffalo, N. Y. He entered railway service in 1881 as a stenographer in the employ of the New York Central & Hudson River (New York Central), at New York, which position he held until 1882 when he left to become stenographer and secretary to the president of the Michigan Central at Detroit, Michigan, and from 1887 to 1902 he was a traffic representative of the same road. From the latter date until the present he has been engaged in the railway supply business, having been connected with the Detroit Seamless Tube Company the Globe Seamless Tube Company and the National Car Equipment Company. He was elected a vice-president of the Joliet Railway Supply Company in October, 1917, which position he has held until the recent change in the organization.

J. H. Slawson

C. A. Carscadin

The O'Malley Beare Valve Company has removed its downtown, Chicago, sales and service office from 841 Railway Exchange building to its new general office and manufacturing plant 231 to 259 East Ninety-fifth street.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company, reported in the *Railway Age* of June 17, page 1507, as authorizing the construction of the first unit of enlarged freight terminal facilities at Dallas, Tex., to cost approximately $200,000, has completed plans for this work. The work includes a new concrete warehouse and office building, 60 ft. by 240 ft. with an 8 ft. by 200 ft. platform; a 60 ft. by 60 ft. concrete warehouse addition with an 8 ft. by 60 ft. platform, and a 30 ft. by 150 ft. open concrete platform.

BALTIMORE & OHIO.—This company will rebuild its elevators and grain piers at Locust Point, Baltimore, recently destroyed by fire. The new facilities will be built of steel and concrete and provided with modern conveying machinery. The elevators will be equipped with conveying galleries leading from storage bins to merchandise piers and running the full length of these. These galleries will be provided with chutes enabling vessels to load grain simultaneously with general cargo, thus effecting a saving in time in loading vessels and enabling shifting at the piers to be reduced to a minimum.

CANADIAN PACIFIC.—This company has completed plans for branch lines, construction to include the closing of the existing gap in the Weyburn, Sask.-Lethbridge, Alta., line; the grading of the first 60 miles east from Consul, Sask.; the equipping for traffic of the first 50 miles of the line from Lanigan, Sask., to Naicam and the completion of the line extending north from Russel, Man., 12.5 miles.

CANADIAN NATIONAL.—This company has awarded contracts for water supply improvements on the Grand Trunk Pacific as follows: The construction of dams at Pope, Man., Raymore, Sask., Maryfield, Sask., Mecheche, Alta., and Conquest, Sask., to W. A. Dutton, Winnipeg, Man.; the construction of a dam at Wiseton, Sask., to the Northern Construction Company, Winnipeg, Man.; the construction of a dam at Rama, Sask., to C. G. Anderson, Norwood, Man.; the construction of pipe lines at Wiseton, Sask., Rama, Sask., Raymore, Sask., and Maryfield, Sask., to Green & Elsasser, Winnipeg, Man.; the construction of a pipeline at Pope, Man., to G. M. Irwin, Stonewall, Man.; a pipe line at Mecheche, Alta., to the Jamieson Construction Company, Edmonton, Alta.; a pipeline at Tilney, Sask., to Riley & Reed, Patience, Alta.; and 10,000 ft. of pipeline at Lloydminster, Alta., to Simpson & Shillington, Winnipeg, Man. This company has also awarded contracts to Gibbs Bros., Lumsden, Sask.; and to Rossa & Wikstrand, Saskatoon, Sask., respectively, for a line revision of the Boundary subdivision near Lampman, Sask., and for a connection between the Craik and Riverhurst subdivisions at Regina, Sask.; also a contract to the Ideal Fence & Spring Co., of Canada, Winnipeg, Man., for approximately 50 miles of fencing on the Oakland, Man., subdivision.

CHICAGO, BURLINGTON & QUINCY.—This company reported in the *Railway Age* of June 24, page 1755, as accepting bids for the construction of a power house at Plattsmouth, Neb., and a five-stall roundhouse at Council Bluffs, Iowa, has awarded the contract for the former to the Jones Engineering Company, Chicago, and contract for the latter to the Home Builders, Omaha, Neb.

ILLINOIS CENTRAL.—A contract has been awarded to Joseph E. Nelson & Sons, Chicago, for the construction of brick standard interlocking towers at Peotone, Ill., Manteno and Monee streets.

LOUISIANA & ARKANSAS.—This company will receive bids until 11:00 a. m., July 31, for the construction and equipment of a locomotive repair shop at Stamps, Ark. The work includes a main building 286 ft. by 129 ft., a blacksmith shop 60 ft. by 80 ft., a power house 68 ft. by 72 ft., a lavatory building 17 ft. by 32 ft., and an office building 36 ft. by 60 ft. With the exception of the office building, which will be a two-story frame structure, all the buildings will be of brick construction with large glass wall areas. The main building and the blacksmith shop will have structural steel frames. The equipment to be provided will be found in our equipment and supplies column.

Railway Financial News

ALABAMA & VICKSBURG.—*New Directors.*—R. E. Kennington, of Jackson, Miss., and A. S. Bozeman, of Meridian, Miss., have been elected directors.

BALTIMORE & OHIO.—*Equipment Trusts Sold.*—Kuhn, Loeb & Co., Speyer & Co., and the National City Company have sold privately at prices to yield an average of 5.25 per cent and subject to approval by the Interstate Commerce Commission, $6,750,000 5 per cent equipment trust certificates, maturing in equal annual instalments from August 1, 1923, to August 1, 1937, inclusive.

BOSTON & MAINE.—*Meeting Postponed Again.*—The annual meeting, several times adjourned, was again held up on July 14 by new court action of E. D. Codman. A bill in equity was filed in the Supreme Court of Massachusetts against the New York Central and 42 other defendants, including officers and directors of the Boston & Maine, to prevent what the plaintiff says is an attempt on the part of the New York Central to secure a control of the Boston & Maine. Judge Crosby issued an order of notice returnable July 18 and the Boston & Maine meeting was adjourned until July 27.

Mr. Codman filed his suit after Supreme Court Justice Crosby had denied his previous petition for an injunction to prevent a declaration of the vote cast at the Boston & Maine meeting in May on 222,000 shares of stock held by the New York, New Haven & Hartford. These shares are in the custody of trustees appointed by the United States Circuit Court for the Southern District of New York. Under the order of that court the trustees were directed to vote for six directors nominated by the New Haven Road.

BOSTON & MAINE.—*Equipment Trust Authorized.*—This company has been authorized by the Interstate Commerce Commission to assume obligation and liability in respect of $1,815,000 of equipment trust certificates to be issued by the First National Bank of Boston and sold at not less than 98.42.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—*Payment for Stock.*—See New York Central.

CLINTON & OKLAHOMA WESTERN.—*Authorized to Issue Bonds.*—This company has been authorized by the Interstate Commerce Commission to issue $500,000 of first mortgage 6 per cent gold bonds and $400,000 of second mortgage 5 per cent gold bonds to be exchanged at a par for $900,000 of first mortgage 5 per cent gold bonds now outstanding.

DAYTON, TOLEDO & CHICAGO.—*To Be Sold.*—W. H. Ogborn, receiver, pursuant to a court order, will offer this road for sale at public auction on August 24, 1922, at the court house in Troy, Ohio. The sale will include the 90 miles of main track between Stillwater Junction, Ohio, and Delphos, 12 miles of side track, one locomotive, two coaches, one baggage car, right-of-way, real estate and all other properties incident to and connected with the operation of the line.

DULUTH & IRON RANGE.—*Annual Report.*—The income account for the year ended December 31, 1921, compares as follows:

	1921	*1920
Operating revenue	$4,972,513	$10,781,732
Gross income	5,348,710	11,471,821
Operating expenses	4,369,544	5,695,087
Railway tax accruals	298,852	1,159,229
Interest on funded debt	407,550	407,550
Total deductions	5,204,034	8,721,492
Net income	144,676	2,750,329
Income applied to sinking and other reserve funds.	.....	1,254,447
Balance to profit and loss	144,676	1,495,882

*Does not include federal income for months of January and February.

EASTLAND, WICHITA FALLS & GULF.—*Authorized to Issue Securities.*—The Interstate Commerce Commission has authorized the issuance of $556,000 of common stock and $350,000 of first mortgage bonds to be delivered to John Ringling in payment for advances.

FONDA, JOHNSTOWN & GLOVERSVILLE.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and sell $550,000 of 4½ per cent 50-year first consolidated general refunding mortgage bonds.

GULF, MOBILE & NORTHERN.—*Authorized to Abandon Line.*—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of 3.4 miles of this company's McLain branch north of Piave, Miss.

KNOXVILLE & CAROLINA.—*Authorized to Issue Securities.*—This company has been authorized by the Interstate Commerce Commission to issue at par $260,200 of common stock and $132,000 of first mortgage bonds to be used to pay for the railroad property acquired from L. C. Gunter, formerly the Knoxville, Sevierville & Eastern.

LOUISIANA & NORTHWEST.—*Initial Dividend.*—The directors have placed the stock on a 6 per cent annual basis by declaring an initial dividend of $1.50 a share, payable October 1, for the quarter ending September 30, 1922.

MEMPHIS, DALLAS & GULF.—*Authorized to Abandon Line.*—The Interstate Commerce Commission has issued a certificate authorizing the receiver to abandon as to interstate and foreign commerce its lines from Glenwood to Hot Springs, Ark., 35.3 miles; Graysonia to Leard, Ark., 5.49 miles; and from Daleville to Clark's Mill, Ark., 10.64 miles.

MISSOURI, KANSAS & TEXAS.—*Cash Installment on Deposited Stock.*—J. & W. Seligman & Co. and Hallgarten & Co., reorganization managers, announce that a cash installment of $5 a share on the common stock and $4 a share on the preferred was payable July 18 on stock deposited with the Equitable Trust Company of New York.

Bond Readjustment.—See Sherman, Shreveport & Southern.

MUSCATINE, BURLINGTON & SOUTHERN.—*To Foreclose.*—Foreclosure proceedings to collect $517,800, brought by the Continental & Commercial Trust & Savings bank, Chicago, against the Muscatine, Burlington & Southern, were heard in the Federal District Court at Muscatine on July 13. It is expected that this road, which operates between Muscatine, Iowa, and Burlington, 54 miles, and is now in the hands of a receiver, will be ordered sold by the court eventually. There are rumors that the Minneapolis & St. Louis, the Chicago, Milwaukee & St. Paul or the Chicago, Burlington & Quincy might seek to annex the property.

NEW YORK CENTRAL.—*Authorized to Issue Stock.*—The Interstate Commerce Commission has authorized an issue of $23,478,880 of stock to be used in payment for common and preferred stock of the Cleveland, Cincinnati, Chicago & St. Louis. The order calls attention to the fact that the Big Four is included in the New York Central System in the grouping of roads under the tentative plan for consolidation promulgated by the commission and that it is represented that the proposed acquisition of stock of the Big Four will be in aid of such consolidation.

NORTHERN PACIFIC.—*Bond Offering.*—J. P. Morgan & Co., the First National Bank and the National City Company are offering this morning an issue of $8,702,300 refunding and improvement mortgage 5 per cent bonds, series "C," dated January 1, 1922, and due July 1, 2047, at 96 and interest to yield 5.20 per cent. The bonds are callable at 105 after 1952. The proceeds will be used to pay off the outstanding Northern Pacific-Great Northern joint 6½s, which were not exchanged.

OCALA & SOUTHWESTERN.—*Asks Authority to Abandon Line.*—This company has applied to the Interstate Commerce Commission for a certificate authorizing the abandonment of its line from Ocala to Ray, Fla., 6 miles.

PENNSYLVANIA.—*Lease of Panhandle.*—See article on another page entitled "Lease of Panhandle by Pennsylvania Authorized Conditionally."

PITTSBURGH, CINCINNATI, CHICAGO & ST. LOUIS.—*Pennsylvania's Lease.*—See article on another page entitled "Lease of Panhandle by Pennsylvania Authorized Conditionally."

SEABOARD AIR LINE.—*Asks Authority for Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority to enter into an equipment trust agreement with the

Chase National Bank for the issuance of $2,450,000 of 6 per cent equipment trust certificates under the Philadelphia plan for the acquisition of 1,000 new freight cars and 4 dining cars and 1,000 rebuilt box cars. The certificates have been sold to Freeman & Co. at 97.02.

SHERMAN, SHREVEPORT & SOUTHERN.—*Readjustment of Bonds.*—A plan and agreement of readjustment of the 50-year first mortgage 5 per cent gold bonds, guaranteed by the Missouri, Kansas & Texas, has been prepared by the protective committee of these bonds, according to an announcement by R. Walter Leigh, Chairman. Mr. Leigh has sent a notice to all holders of certificates of deposit of the Columbia Trust Company, issued under the deposit agreement of February 15, 1916, stating that they shall be assumed to have assented to and ratified the plan unless within twenty days after July 19, 1922, the date of first publication of the announcement, they shall dissent and withdraw the bonds represented from the deposit agreement. Holders of undeposited bonds who do not deposit shall have no right, the notice states, to participate in the plan of readjustment.

ST. LOUIS-SAN FRANCISCO.—*Six Months Guaranty Certified.*—The Interstate Commerce Commission has issued a final certificate placing the amount of this company's guaranty for the six months period of 1920 at $5,385,449, of which $835,449 was still to be paid and that of the St. Louis, San Francisco & Texas at $314,967 of which $114,967 was to be paid.

RUTLAND.—*Asks Authority to Discontinue Operation of Line.*—This company has applied to the Interstate Commerce Commission for authority to discontinue operation between the Vermont shore of Lake Champlain and Fort Ticonderoga, N. Y.

TOLEDO TERMINAL.—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized an issue of $321,000 of first mortgage bonds at 91.78 for the purpose of liquidating $294,613.80 of demand notes payable to proprietary companies.

YAZOO & MISSISSIPPI VALLEY.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $5,034,000 of 5 per cent gold improvement mortgage bonds to be delivered to the Illinois Central at par in payment of advances for additions and betterments.

Dividends Declared

Cuba Railroad.—Preferred, $3, semi-annually, payable August 15 to holders of record July 20; $3, semi-annually, payable February 15, 1923, to holders of record July 20.

Louisiana & Northwest.—$1.50, quarterly, payable October 1, for the quarter ending September 30.

Trend of Railway Stock and Bonds Prices

	July 18	Last Week	Last Year
Average price of 20 representative railway stocks	67.65	67.25	55.37
Average price of 20 representative railway bonds	87.78	87.02	74.42

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The Erie Triplex on the Susquehanna Grade

Railway Officers

Executive

Morris K. Trumbull, formerly assistant chief engineer of the Chicago & Western Indiana and more recently consulting engineer with the American Sugar Refining Co., has been appointed executive assistant to the president of the Canton Railroad Company with headquarters at Baltimore, Md.

Stanton Ennes, whose election to the presidency of the Wheeling & Lake Erie was announced in the *Railway Age* of July 8, page 91, was born on March 19, 1862, at St. Louis, Mo. He began his railroad career on July 10, 1881, on the Texas Pacific. Leaving this road on December 31, 1881, he entered the service of the Southern Pacific as a telegraph operator and was employed in this capacity and later as a brakeman in the service of this company until December 20, 1883. On August 9, of the following year he entered the service of the Missouri Pacific as a telegraph operator and consecutively from that time he was engaged as a telegraph operator, until May 15, 1886, as a train dispatcher until June 1, 1893, and as chief dispatcher until July 1, 1902, on which last date he was promoted to division superintendent with headquarters at Nevada, Mo. He left the Missouri Pacific in April, 1904, and consecutively thereafter was superintendent on the Western Maryland until September, 1905; assistant superintendent on the Grand Trunk at Ottawa, Ont., from January 15, 1906, to April 1, 1907; and superintendent on the Great Northern from the latter date until 1915, when he re-entered the service of the Western Maryland as general manager. During federal control he was transferred to the Baltimore & Ohio and served as general manager of the lines of this road from Cumberland, W. Va., to the Atlantic coast after March 1, 1920. He continued as general manager of the Eastern Lines of the Baltimore & Ohio until January 1, 1921, when he was elected vice-president and general manager of the Wheeling and Lake Erie, which position he held at the time of his recent promotion.

S. Ennes

Financial, Legal and Accounting

G. E. B. Welles has been appointed to the newly created position of supervisor of land valuation of the Southern Pacific, Pacific system, with headquarters at San Francisco.

F. J. Goebel, assistant counsel of the Cincinnati, Indianapolis & Western, with headquarters at Indianapolis, Ind., has been appointed general attorney which position he will hold in addition to serving as secretary of that road.

J. Welch, assistant comptroller of the Chicago, Milwaukee & St. Paul with headquarters at Chicago, has been promoted to assistant secretary and treasurer with headquarters at New York. He will be succeeded by **T. I. Walsh,** assistant auditor of expenditure with headquarters at Chicago.

George D. Hill, statistician in the operating department of the Seaboard Air Line, has been appointed traveling auditor of joint facility accounts, with headquarters at Portsmouth,

Va. The office of statistician has been abolished, the work being transferred to the accounting department.

Operating

E. E. Peterson has been elected secretary and general manager of the Lakeside & Marblehead with headquarters at Cleveland, Ohio, succeeding A. B. Mack, resigned.

A. W. Flanagan has been appointed assistant superintendent of telegraph of the Southern Pacific, Pacific System, and of the Western Union Telegraph Company, with headquarters at San Francisco, Cal.

George Hodge, whose appointment to assistant general manager, Eastern lines, of the Canadian Pacific was announced in the *Railway Age* of July 8, page 91, was born in October, 1874. In March, 1890, he entered the service of the Canadian Pacific as a clerk in the general passenger department at Montreal. In August, 1890, he became a clerk in the office of the assistant to the president. Two years later he was promoted to secretary to the vice-president and, in 1897, became chief clerk to the vice-president. In March, 1907, he was promoted to superintendent of terminals at Montreal and, in March, 1911, was transferred in a similar capacity to London, Ont. A year later he was appointed general superintendent with headquarters at Montreal and in June, 1915, was appointed assistant to the general manager, Eastern lines, with headquarters at Montreal. In October, 1918, he became assistant to the vice-president which position he was holding at the time of his recent appointment.

G. Hodge

Alfred Price, whose retirement from the general managership of the Canadian Pacific, Eastern lines, for an indefinite period at the advise of physicians was announced in the *Railway Age* of July 8, page 91, was born in Toronto, Ont., on December 6, 1861, and was educated in the public schools and the School of Practical Science, Toronto. He entered business as a messenger for the Montreal Telegraph Company, at the Toronto office in 1875. On September 3, 1879, he joined the service of the Ontario Credit Valley Railway as a telegraph operator and clerk. In 1881 he took charge of the car accounting and records department of the company and in July, 1882, was promoted to dispatcher. In July, 1888, he became car distributor and in May, 1896, assumed the duties of chief dispatcher. Mr. Price was in August, 1898, appointed superintendent of the Toronto terminals of the Canadian Pacific. In May, 1903, he became superintendent of the Fort William terminals and in August, 1904, was promoted to superintendent of transportation with headquarters at Winnipeg. Three years later he was promoted to general superintendent with the same headquarters and in December, 1907, was transferred in a similar capacity to Calgary, Alta. In 1913 he became assistant general manager, Eastern lines, with headquarters at Montreal and in October, 1918, was promoted to general manager, Eastern lines.

A. D. Price

John J. Scully, whose appointment as general manager, Eastern lines, of the Canadian Pacific was announced in the *Railway Age* of July 8, page 91, was born on February 3, 1872. On January 4, 1887, he joined the service of the Canadian Pacific as office boy in the offices of the car accountant at Montreal. He successively filled the following positions: February, 1888, clerk in the car account's office, Montreal; June, 1888, clerk to the assistant superintendent at Farnham, Quebec; August, 1890, clerk in the office of the superintendent at Montreal; April, 1891, clerk to the assistant superintendent at Farnham; March, 1893, clerk in the mechanical department at Montreal; September, 1894, clerk in the mechanical department at Toronto Junction. In March, 1898, he was appointed assistant to the master mechanic at Toronto Junction and in August, 1901, he was transferred in a similar capacity to Winnipeg. In August, 1902, he became chief clerk in the general superintendent's office at Winnipeg. He was appointed assistant superintendent of the Western division in June, 1903, and in July, 1903, chief clerk to the assistant manager at Winnipeg. In April, 1904, he became assistant superintendent at Brandon, Man., and three months later was appointed superintendent at Brandon, Man. In November, 1906, he was transferred to Kenora, Ont., and in May, 1910, became superintendent of the Western division. He was promoted to general superintendent of the Saskatchewan district in July, 1910, and in April, 1912, was transferred to the Algoma district, North Bay, Ont., where he was serving at the time of his recent promotion.

J. J. Scully

H. C. Koch has been appointed general superintendent of the New Orleans, Natalbany & Western with headquarters at Natalbany, La., to succeed O. C. Pantall and the office of superintendent has been abolished.

C. J. Brown, trainmaster of the Chester district of the Missouri Pacific, has been appointed acting superintendent of the Illinois division, to succeed **O. E. Coyne,** granted leave of absence due to ill health. **E. E. Buckminister** has been appointed acting trainmaster of the Chester district.

Mechanical

M. Meehan has been appointed master car repairer of the Western division of the Southern Pacific, Pacific system, with headquarters at West Oakland, California, to succeed **H. Englebright,** retired.

Engineering, Maintenance of Way and Signaling

C. F. Hinchman, engineer maintenance of way of the Indianapolis terminals of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Indianapolis, Ind., has had his jurisdiction extended over the Springfield division, from Springfield, Ohio, to Indianapolis, with the title of engineer maintenance of way, Springfield division and Indianapolis terminal, with the same headquarters.

Traffic

N. C. Osborn has been appointed commercial agent of the Seaboard Air Line with headquarters at Memphis, Tenn.,

succeeding D. W. Anderson, effective August 1. **B. F. Black** has been appointed general eastern freight agent with headquarters at New York, N. Y., succeeding N. C. Osborn and **D. W. Anderson** has been appointed commercial agent with headquarters at New York, N. Y., succeeding Mr. Black.

R. G. Nicholson, chief clerk in the general freight office of the Atchison, Topeka & Santa Fe at Chicago, has been promoted to assistant general freight agent, with headquarters at Chicago, to succeed J. H. McCabe, promoted. Mr. Nicholson was born on October 10, 1882, at Milwaukee, Wis. He entered the service of the Wisconsin Central (now a part of the Minneapolis, St. Paul & Sault Ste. Marie) in October, 1898, as a clerk, which position he held until 1900 when he left to become a stenographer and clerk for the Atchison, Topeka & Santa Fe. He left in 1902 to engage in other business and in 1905 he re-entered the employ of the Atchison, Topeka & Santa Fe as a clerk in the traffic office at Milwaukee, Wis., and was soon transferred to the Chicago office. He was promoted to claim clerk in the freight department at Chicago in 1907 and served successively as rate clerk, chief rate clerk, assistant chief clerk and chief clerk in the same department, which latter position he was holding at the time of his recent promotion.

R. G. Nicholson

C. C. Dana, general freight agent of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, has been promoted to assistant freight traffic manager with the same headquarters, to succeed F. A. Manter, deceased. Mr. Dana was born on August 17, 1868, at Morrisville, N. Y., and after graduating from Princeton University in 1891, entered railway service as a clerk in the general manager's office of the Atchison, Topeka & Santa Fe at Topeka, Kan. He was later employed as a clerk in the local office at Topeka, which position he held until 1895, when he left to become material agent of the Cerrillos Coal Railroad Company at Los Cerrillos, N. M. He returned to the Atchison, Topeka & Santa Fe in March, 1895, as assistant chief clerk in the assistant superintendent's office at Fort Madison, Iowa, and on December 31, 1897, he was promoted to agent at Pekin, Ill. From January, 1898, to June, 1913, he was successively traveling freight agent with headquarters at Streator, Ill., and division freight agent with headquarters at Fort Madison, Iowa. On the latter date he was promoted to industrial agent with headquarters at Chicago, which position he held until July 1, 1916, when he was promoted to general freight and passenger agent of the Panhandle & Santa Fe and assistant general freight agent of the Atchison, Topeka & Santa Fe, with headquarters at Amarillo, Tex. He held these positions until July 14, 1920, with the exception of the period from October 1, 1918, to April 15, 1919, when he was assigned to the U. S. R. A. at Washington, D. C. to act as personal assistant to Edward Chambers, director of the division of traffic. On July 15, 1920, he was appointed general freight agent of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, which position he was holding at the time of his recent promotion.

C. C. Dana

J. H. McCabe, assistant general freight agent of the Atchison, Topeka & Santa Fe with headquarters at Chicago, has been promoted to general freight agent with the same headquarters, succeeding C. C. Dana, promoted. Mr. McCabe was born on November 20, 1873, at Washington, D. C., and entered railway service in February, 1887, as an office boy in the auditing department of the Atchison, Topeka & Santa Fe at Chicago. He has been in service of that company continuously since the latter date, as a clerk in the local office from 1891 to 1898, a clerk in the refrigerator department from 1898 to 1900, and a clerk in the general freight department from 1900 to 1913. In the latter year he was promoted to chief clerk in the general freight department, and on March 1, 1920, he was appointed assistant general freight agent, which position he was holding at the time of his recent promotion.

J. H. McCabe

Purchasing and Stores

A. H. Laret, whose appointment as assistant to the vice-president and chief purchasing officer of the St. Louis-San Francisco was noted in the *Railway Age* of June 17, page 1514, was born on October 11, 1890, at Pittsburg, Kan. He entered railway service in 1906 as a stenographer in the local freight agent's office of the St. Louis-San Francisco at Pittsburg, Kan. He was employed as a stenographer in the general storekeeper's office of the Kansas City Southern from January, 1907, to August, 1909, and as a stenographer in the stores department of the Atchison, Topeka & Santa Fe from August, 1909, to December, 1910. He was then promoted to secretary to general storekeeper of the latter road. He re-entered the service of the St. Louis-San Francisco on November 15, 1913, as secretary to the chief purchasing officer. In April, 1914, he was promoted to assistant chief clerk, and in August, 1915, to chief clerk, which latter position he held until the period of federal control when he acted as assistant chief clerk to purchasing agent of the St. Louis-San Francisco and the Missouri, Kansas & Texas. At the close of federal control on March 1, 1920, he was appointed chief clerk to the vice-president and chief purchasing officer of the St. Louis-San Francisco, remaining in that capacity until June 1, 1922, when he was promoted to his present position.

A. H. Laret